Small Forest Management on the Urban Fringe: a Bibliography

Prepared by the King County Office of Resource Lands and Open Space

December 8, 1998

Introduction

The following bibliography is a compilation of sources applicable to various aspects of small forest management. The work was initiated by the King County (WA) Office of Resource Lands and Open Space as part of its effort to assist small forest landowners in their efforts to steward their land in the rapidly urbanizing areas of King County, Washington.

Realizing the fact that the body of literature on forest management is quite extensive, this literature review was narrowed to focus on the fifteen topics listed below. With few exceptions, the bibliography does not represent an effort to apply the larger body of forestry literature to the small forest landowner. For example, no attempt was made to adapt an article on the use of herbicides on industrial forest lands to the needs of small forest owners. For the most part, the references included were published in the 1990s. The primary exception to this is the books included, as many of the books relating to small forest management were published prior to 1990 and serve as valuable overviews of the subject.

This work was undertaken with two audiences in mind: the small-scale non-industrial private forest owner and the planners and policy makers responsible for working with these owners. As such, many of the sources may be more appropriate to one group than the other. No attempt was made to separate the sources based on the intended audience. As an example, "Where to get Trees to Plant" and "Impacts of Technical Assistance on Private Nonindustrial Reforestation" are both included in the Assistance category in the bibliography.

Sources:

The majority of the references listed in this bibliography come from the sources listed below. Most of the references are on file in the University of Washington College of Forest Resources Library. Unless otherwise noted, “Call Number” refers to this library. Some of the sources are on file at the King County Office of Resource Lands and Open Space. These are identified with a “Y” following the words “On file?”. If the headings “Call Number” and/or “On file?” do not follow a reference, this information is not yet available in the bibliography.

- Books: Only publications relating directly to various aspects of small forest management are included.

- Journals: The majority of the articles come from American Forests, Canadian Journal of Forest Research, Journal of Forestry, Forest Science, National Woodlands, Northern Journal of Applied Forestry, Southern Journal of Applied Forestry, and Western Journal of Applied Forestry. Articles from other journals are included but less prevalent.

- Cooperative Extension Publications: The majority of those included are published by the Washington State Cooperative Extension Program. Literature from cooperative units in other states was included if it was deemed particularly unique or pertinent to the situation in King County.

- United States Forest Service Publications: Includes Research Papers, Notes and Bulletins, and General Technical Reports published by the various USFS Experiment Stations around the country.

- Conference Proceedings: Proceedings from the Society of American Foresters National Conventions and other conferences relating in part to small forest management.

Subject Headings:

As mentioned, the bibliography is divided into fifteen subject headings. While there is bound to be some overlap among the different headings, and many of the references may fit easily into more than one heading, the division was established to facilitate use of the bibliography. The subject headings are as follows:

- Aesthetics – Includes articles on the visual impacts of forest management and how to manage forests so as to achieve desired aesthetic outcomes.

- Assistance – This category focuses on the organizational framework for providing technical assistance to nonindustrial private forest landowners (NIPFs). Many of the articles offer suggestions for improving technical assistance programs.

- Cooperative Management – Focuses on efforts within the United States and abroad to form cooperative efforts between forest owners.

- Education – Focuses on outreach strategies for offering assistance to NIPFs.

- Forest Management – This is somewhat of a catchall category of references that do not fit completely into any of the other categories.

- Harvesting - Deals with the harvesting process as opposed to other forest management and silvicultural activities. Many of these references relate to equipment used in the harvesting process and ways to minimize impacts on standing trees.

- Incentives - This literature focuses on financial incentives and tax programs offered around the country. Includes both descriptions of programs and analyses of success.

- Marketing - Includes primarily "how-to" articles on marketing and selling timber products.

- Regulation - This literature search did not focus on regulatory systems related to forest management. As such, only a few articles are included in this section. They deal specifically with regulations impacting private forest owners.

- Silviculture - The articles in this section are the result of an effort to select from the vast literature on silviculture those articles relating to small-scale forestry in the Northwest, particularly the lowland areas west of the Cascades. As such, the majority of the articles relate to thinning in Douglas Fir forests.

- Small Forest Management - Includes articles focusing specifically on small forest (woodlot) management. Many of the articles are general "how tos" for small forest planning and management.

- Social Science - This extensive section includes the majority of the social science research focusing on the attitudes, values and decision processes of non-industrial private forest landowners around the country. Articles in this section will be most helpful to planners and policy makers in their efforts to work with non-industrial private forest owners.

- Special Forest Products - This section includes articles from the emerging body of literature relating to "special forest products" or "non-timber products." Articles focus on all aspects of the special forest products industry, from growing Christmas trees to harvesting wild mushrooms and salal. Articles on recreational fees are also included in this section.

- Urban/Rural Fringe - Includes the limited number of articles relating to forest management in areas under pressure from urbanization, with specific emphasis on issues of parcelization.

- Wildlife – Includes articles on how to manage forests with the goal of enhancing wildlife habitat.

Aesthetics

Benson, R. E., S. F. McCool, et al. (1985). "Attaining visual quality objectives in timber harvest areas--landscape architects' evaluation". Ogden, Utah. U S D A Forest Service Research Paper: Intermountain Forest and Range Experiment Station. p. 7. Call Number: 634.9072.Un316rp or SD11.A4552.

Bergen, S. D., J. L. Fridley, et al. (1995). "Predicting the visual effect of forest operations." Journal of Forestry 93(2) p. 33-37. Call Number: 634.905 J.

A case study in the Cascade Range, Washington, was used to show how a geographic information system can be used to identify areas at risk of visual degradation from harvest activities proposed in a management plan.

Bergen, S. D., J. L. Fridley, et al. (1993). Identifying and quantifying the potential for visual impact in the design of a forest harvest plan: a case study. Application of advanced information technologies: effective management of natural resources., Spokane, Washington, p. 465-474.

A commercial GIS application was used to assess the visual impact of logging planned for the Siouxon Block in the Cascade Range, Washington. The preparation of 3-dimensional data for the visibility analysis is discussed. Issues addressed included identification of appropriate viewpoints, the ability of the selected viewpoints to reflect the true visibility of the area, and quantification of the results of the analysis. The harvest planning area was visible from a road with a high volume of tourist traffic. Analysis from more than a few viewpoints can lead to complex results; simplification of the results is discussed. The results of the analysis are overlaid with the proposed road system and harvest unit boundaries to identify the potential for high visual impact. Harvest activities could then be modified if necessary in certain areas.

Boteler, F. E. and H. C. Smith (1984). "Public preferences for visual resources: a summary of research findings". Morgantown, WV. WV Univ Agric For Exp Stn. p. 1-4.

Brunson, M. and B. Shelby (1992). "Assessing recreational and scenic quality." Journal of Forestry 90(7) p. 37-41. Call Number: 634.905J.

'New Forestry' in the USA encompasses planning strategies and silvicultural methods that, when applied systematically at varying spatial and temporal scales, can imitate patterns of natural disturbance and diversity more closely than traditional high-yield forestry. Results are given of a survey in Oregon State University research forest of the scenic and recreational quality, as determined by 95 people, of an old-growth Douglas fir (Pseudotsuga menziesii) stand and 5 nearby stands logged within the previous 2 yr. Two stands had been logged with traditional practices (thinning or clear felling) and 3 used 'New Forestry' methods - patch felling, 2-storey (similar to shelterwood but without overstorey removal) and clear felling with snag retention - and included enhancement of wildlife habitat by topping 1.5 trees/acre and leaving logging debris. The old-growth stand was rated as most acceptable for scenic viewing, hiking and camping. 'New Forestry' stands were rated higher than stands where more traditional practices were used. Elements of scenic attraction, the influence of recreational use on quality judgements and management implications of the results are discussed.

Campbell, S. M. and D. B. Kittredge, Jr. (1992). "Woodscape crew for small woodlot management in southeastern Massachusetts." Northern Journal of Applied Forestry 9(3) p. 116-118. Call Number: SD1.N676. On file? Y.

Nonindustrial private forest landowners in southern New England own their properties for reasons other than timber income. Reasons such as wildlife observation and habitat, outdoor recreation opportunities, pride of ownership, and aesthetic enjoyment commonly rank higher than timber income (Birch in prep., Alexander 1986, Kingsley 1976). Previous research has shown that landowners and the general public often prefer the appearance of a managed stand to that of an unmanaged one (Brush 1979). The study reported here sought to produce aesthetically attractive stands using small scale logging equipment, and to quantify the cost of this activity. This so-called "woodscape" work was accomplished in the winter and spring by landscaping professionals, who often would benefit from some employment at this time of year. The reason to investigate the idea of woodscaping is based on the belief that landowners are more likely to manage when the primary focus or result is an attractive and healthy forest, rather than wood products removed.

Dwyer, J. F., H. W. Schroeder, et al. (1991). “The significance of urban trees and forests: toward a deeper understanding of values.” Journal of Arboriculture 17(10) p. 276-284. Call Number: SB435.J68.

Gobster, P. H. (1994). "The aesthetic experience of sustainable forest ecosystems". Fort Collins, Colo. Rocky Mountain Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture. p. 246-255. Call Number: SD11.R53a.

Gobster, P. H. (1995). “Aldo Leopold's ecological esthetic: integrating esthetic and biodiversity values.” Journal of Forestry 93(2) p. 6-10. Call Number: 634.905 J.

Gobster, P. H. and R. E. Chenoweth (1989). “The dimensions of aesthetic preference: a quantitative analysis.” Journal of Environmental Management 29(1) p. 47-72. Call Number: TD169.J67.

A study was made of the ability of physical, artistic, and psychological descriptor dimensions to predict aesthetic preferences for rural river, forest, and agricultural landscape scenes. Some descriptors were effective in predicting preference across a range of landscape types, while others were effective within a particular landscape type.

Helliwell, D. R. (1979). “Economic aspects of amenity woodland management.” Arboricultural Journal 3(7) p. 541-546. Call Number: SB435. A75.

It is argued that woodlands under 5 ha in Britain can show higher net benefit when managed primarily for amenity rather than timber production, if monetary equivalents are put on their value for amenity and nature conservation. An example is given. Changes in taxation and grants are suggested to make woodland investment more attractive to those with small tax liabilities and to discourage clear felling. [See FA 28, 6713]

Hoeksema, R. a. H. W. (1985). “Timber harvest aesthetics.” National Woodlands 8(4) p. 9. Call Number: SD387.W7 N35.

Jones, G. T. (1995). “The careful timber harvest: a guide to logging esthetics.” Journal of Forestry 93(2) p. 12-15. Call Number: 634.905 J.

Jones, G. T. (1995). “Looks matter: The importance of logging aesthetics.” National Woodlands 18(2) p. 12-15. Call Number: SD387.W7 N35.

Kronrad, G. D. (1986). “Forest management can improve the beauty of your woodland.” National Woodlands 9(3) p. 5-7. Call Number: SD387.W7 N35.

Magill, A. W. (1990). "Assessing public concern for landscape quality: a potential model for identify visual thresholds". Albany, Calif. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. p. 52.

Magill, A. W. (1990). Monitoring environmental change with color slides: developing visual sensitivity. Proc-Soc-Am-For-Natl-Conv., Bethesda, Md, p. 597-598. Call Number: 634.906 SOP.

Magill, A. W. (1991). Our managed landscapes: opinions of what people see. Proc-Soc-Am-For-Natl-Conv., Bethesda, Md., p. 523-524. Call Number: 634.906 SOP.

Magill, A. W. (1992). "Managed and natural landscapes: What do people like". Berkeley, Calif. U S Dep Agric For Serv Pac Southwest For Range Exp Stn. p. 28. Call Number: SD11.A4853.

Magill, A. W. (1992). Visual perceptions of wildlands and opinions on their management. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD, p. 557-558. Call Number: 634.906 SOP.

Magill, A. W. (1994). “What people see in managed and natural landscapes.” Journal of Forestry 92(9) p. 12-16. Call Number: 634.905 J.

Magill, A. W. and C. F. Schwarz (1989). "Searching for the value of a view". Berkeley, Calif. U S Dep Agric For Serv Pac Southwest For Range Exp Stn. p. 9. Call Number: SD11.A4853.

McCool, S. F. and R. E. Benson (1988). "Timber harvesting and visual resources: maintaining quality". Ogden, Utah. U S Dep Agric For Serv Intermt Res Stn. p. 117-122. Call Number: SD11.I57A. On file? Y.

McCool, S. F., R. E. Benson, et al. (1986). "How the public perceives the visual effects of timber harvesting: an evaluation of interest group preferences." Environmental Management 10(3) p. 385-391. Call Number: http://link.springer.de/link/service/journals/00267/index.htm.

Palmer, J. F., P. H. Gobster, et al. (1993). "Long term visual effects of alternative clearcutting intensities and patterns". Radnor, Pa. USDA Forest Service Northeastern Forest Experiment Station. p. 84-87. Call Number: SD11.N57a.

Palmer, J. F., S. Shannon, et al. (1995). "Esthetics of clearcutting alternatives in the White Mountain National Forest." Journal of Forestry 93(5) p. 37-43. Call Number: 634.905 J.

A series of visual simulations was developed to portray potential management scenarios (involving various patterns of clear felling) in the White Mountains National Forest, New Hampshire. The scenic value of these simulations was evaluated in the field by hikers contacted at the original viewpoints. The data were analysed to determine the effect of size, intensity and pattern of clear felling on scenic value. The study also investigated the validity of using a photographic image to represent the visual condition of a forest vista. Results showed that increased felling intensity is associated with increased negative scenic effects. The optimum size for clear fellings in the middle ground was 10-14 acres; both larger and smaller units had lower scenic value at this distance.

Ribe, R. (1991). "The scenic impact of key forest attributes and long-term management alternatives for hardwood forests". Broomall, Pa. U S Dep Agric Forest Service, Northeast Forest Experiment Station. p. 34-54. Call Number: SD11.N57a. On file? N.

Rudis, V. A., J. H. Gramann, et al. (1988). "Forest inventory and management-based visual preference models of southern pine stands." Forest Science 34 p. 846-863. Call Number: SD1.F69.

Statistical models explaining students' ratings of photographs of within-stand forest scenes were constructed for 99 forest inventory plots in east Texas pine and oak-pine forest types. Models with parameters that are sensitive to visual preference yet compatible with forest management and timber inventories are presented. The models suggest that the density of sawtimber-sized trees and the proportion of visual penetration are positively associated with scenic beauty. Foliage, twig, and small stem screening, and the density of small-diameter trees are negatively associated with scenic beauty. Results generally concur with other visual preference studies of within-stand forest scenes. Such models and associated parameter estimates can be used to objectively assess within-stand forest scenes and to routinely monitor scenic beauty of southern pine forest resources. Unlike similar scenic beauty studies, the limited amount of downed wood encountered was positively associated with scenic beauty. Also suggested is a decline in perceived scenic beauty during the summer season (May-October) coincident with sampling from northeast to southwest sections of east Texas. FOR. SCI. 34(4):846-863.

Schroeder, H. W., P. H. Gobster, et al. (1993). "Visual quality of human-made clearings in central Michigan conifers". St. Paul, MN. USDA Forest Service North Central Forest Experiment Station. p. 9. Call Number: SD11.A47.

Schuh, D. (1995). "Managing esthetic values: Weyerhaeuser Company's approach." Journal of Forestry 93(2) p. 20-22, 24-25. Call Number: 634.905 J.

Smith, H. C., N. I. Lamson, et al. (1989). "An esthetic alternative to clearcutting." Journal of Forestry 87(3) p. 14-18. Call Number: 634.905 J.

Zinoviev, L. (1984). “Improving the artistic/aesthetic effect of forests.” Gorsko-Stopanstvo 40(5) p. 38-42.

A general discussion is given of ways of improving the visual appearance of forests in Bulgaria, with special reference to the introduction of broadleaves (especially birch, lime, red oak, sycamore) to add variety to conifer plantations.

Assistance

(1995). "Consulting Foresters Directory for Washington Landowners". WSU Coop Extension. On file? Y.

(1995). "Forestry Education and Assistance Programs for Washington Forest Landowners". WSU Coop Extension. On file? Y.

Barron, E. H. (1984). A privately funded approach to reforestation of private non-industrial lands. New forests for a changing world : proceedings of the 1983 Convention of the Society of American Foresters, Portland, Oregon, p. 609-612.

Baumgartner, D. M., D. Hanley, et al. (1997). "Washington consulting foresters directory". Pullman, WA. Wash State Univ Coop Ext Serv. p. 22.

Baumgartner, D. M. and R. Zabel (1984). "Where to get trees to plant: forest, windbreak, and Christmas trees [List of nurseries in the Pacific Northwest and Montana]". Pullman, Wash. Wash State Univ Coop Ext Serv. p. 4.

Brokl, C. a. M. B. The Woodland Advisor Program. Proceedings of the Symposium on Volunteers and Communication in Natural Resource Education, On file? Y.

Hodges, D. G. and F. W. Cubbage (1990). "Adoption behavior of technical assistance foresters in the southern pine region." Forest Science 36(3) p. 516-530. Call Number: SD1.F69.

Evaluating the economic returns of forestry research has become a major concern of researchers and policy makers in the past decade. Before an accurate estimate of such returns can be estimated, however, information on the factors influencing individual adoption decisions and the timing of adoption needs to be understood. This paper presents the results of an analysis of the factors affecting assistance foresters' choices of management technology in the South. We surveyed public and private foresters assisting nonindustrial private forest landowners to determine what personal and external variables influence the adoption decisions of foresters. Specifically, we examined the variables related to the foresters' decisions to modify current management practices or use new technology. Using logit regression, we found that the forester's employer, information sources, professional membership, and perceptions of the management requirements in their region of responsibility can affect their adoption decisions.The research emphasis of even-aged management over the last 2 decades may be an additional factor in the foresters' decisions to change forest management decisions.

Larson, L. K. (1985). Services to non-industrial private forest owners--a consultant's view. Proc Soc Am For Natl Conv, Bethesda, Md., p. 378-380.

Skinner, M. D., W. D. Klemperer, et al. (1990). "Impacts of technical assistance on private nonindustrial reforestation." Canadian Journal of Forest Research 20(11) p. 1804-1810. Call Number: SD1.C35.

The relation was studied between the number of foresters providing assistance to non-industrial private forest (NIPF) owners in the southern USA and the NIPF acreage planted with pine [Pinus spp.]. For 29 sub-state zones in 12 southern states, data were gathered in 1985 on numbers of NIPF assistance foresters by 4 types, NIPF acreage planted with pine, and several other variables thought to influence levels of pine planting. Using this data, a cross-sectional regression analysis was unable to demonstrate a significant wide-ranging effect of technical assistance on NIPF tree planting when all significant variables were included in the equations. Within the range of data gathered, equations showed that additional cost sharing and the accompanying forestry assistance should increase reforestation, but that added forestry assistance alone is less likely to influence reforestation. Some previous studies support these results, but others do not.

Wetter, F., D. M. Baumgartner, et al. (1987). "Forestry education and assistance programs for Washington forest landowners". Pullman, Wash. Wash State Univ Coop Ext Serv. p. 13.

Wood, D. M. (1986). "The forestry consultant. Part I - Who is the forestry consultant?". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(4). p. 7-9.

Wood, D. M. (1986). "The forestry consultant. Part III - Hiring the good consultant". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(6). p. 10-12.

Cooperative Management

Agarwal, C. and K. Singh (1996). "The Village Cooperative Forestry Societies in Himachal Pradesh (India)". Cooperative management of natural resources. K. a. B. Singh, V. New Delhi, Sage Publications. p. 74-91.

An, K. W. a. I. Y. (1997). Development of forestry cooperatives in Korea and their current activities. Proceedings of IUFRO Symposium: Sustainable management of small scale forestry, Kyoto University, Graduate School of Agriculture, p. 195-200.

Bick, S., H. L. Haney, Jr., et al. (1997). Voluntary landowner participation in landscape management through conservation easements. Proc-Soc-Am-For-Natl-Conv, Bethesda, MD, p. 253-258. Call Number: 634.906 SOP.

Birch, T. W. (1986). "Community with nonindustrial private forestland owners." Journal of Forestry 84(12) p. 25-26, 28, 30-31, 33. Call Number: SD11 N57b. On file? Y.

Brandl, H. (1975). "Economic criteria for joining forest cooperatives." Mitteilungen der Forstlichen Versuchs und Forschungsanstalt Baden Wurttemberg 58 p. 97.

Presents the report of a study group (established by the section for business economics of the Deutsche Forstwirtschaftsrat) analysing the factors of income and costs, taxation questions etc. that are relevant in deciding whether or not a private or communal owner should join a cooperative. The areas of activity in which cooperation may be advantageous (e.g. silviculture, selling, mechanization, purchasing, employment of labour etc.), degrees and legal forms of cooperation, optimum sizes of enterprise, organization, etc., are discussed, and examples are given of profitability calculations.

Brunson, M. W., D. T. Yarrow, et al. (1996). "Nonindustrial private forest owners and ecosystem management: can they work together?" Journal of Forestry 94(6) p. 14-21. Call Number: 634.905 J.

Results are given of surveys during summer and autumn 1994 to determine the attitudes to ecosystem management of nonindustrial private forest (NIPF) owners in the southeast, midwest and interior west regions of the USA. In addition to issues pertinent to the different regions, each survey studied the extent of NIPF owners' knowledge about ecosystem management, their beliefs about this form of management, and the conditions under which they would be willing to join ecosystem management partnerships. Despite considerable differences in tract sizes, land use and mixtures of ownerships in the 3 regions, NIPF owners' attitudes to ecosystem management were strikingly similar and generally positive.

Brusila, B. (1982). Forest management and marketing cooperative: Are they a viable alternative? Proceedings: Fuelwood Management and Utilization Seminar, East Lansing, p. 110-114.

Campbell, S. M. and D. B. Kittredge (1996). "Ecosystem-based management on multiple NIPF ownerships." Journal of Forestry 94(2) p. 24-29. Call Number: 634.905 J. On file? Y.

Cox, T. R. (1987). "Coping with gaizai: Japanese forest cooperatives and imported American timber." Environ Rev 11(1) p. 35-54. Call Number: UW Natural Sciences Library - GF1.E582.

Cubbage, F. W. (1995). "Forest resources, ecosystem management, and social science education: promises, problems, and prospects." Journal of Natural Resource Life Science Education: American Society of Agronomy 24(2) p. 116-125.

Davenport, K. (1984). "The neighbor-to-neighbor approach to improved woodland management [Program, training, communication, Oregon]". Washington, D.C. Soil Water Conserv U S D A Soil Conserv Serv. p. 9.

Dempsey, G. P. (1967). "Forest cooperatives : a bibliography". Upper Darby, Pa. U.S. Forest Service Northeastern Forest Experiment Station,. p. 53. Call Number: SD11.N57b.

Dickson, J. G. (1985). Management, research, and cooperative forestry for multiple benefits. North American Wildlife and Natural Resources Conference. Transactions 50, p. 215-220. Call Number: Sd121.N66a.

Dobbs, D. (1998). "Private Property, Public Good." Audubon July, '98 . On file? Y.

Eid, T. H. H. F. a. O. P. (1997). "Measures for a sustainable forestry - economic consequences of cooperation between properties." Meddelelser fra Skogforsk 48(4) p. 81-97.

Elwood, N. E. (1990). Japanese and U.S. forestry cooperatives: A study in contrasts. IUFRO World Congress, Proceedings, Hull, Quebec, Forestry Canada, IUFRO Organizing Committee. p. 246-256.

Elwood, N. E. (1992). "Forestry cooperatives in Japan; offering management, financial, and educational services." Journal of Forestry 90(6) p. 25-28. Call Number: 634.905 J.

Gilbert, D. H. (1989). Managing small nonindustrial forestlands: the Catskill Forest Association. Proc Soc Am For Natl Conv., Bethesda, Md, p. 276-278.

Grove, M. a. H. M. (1992). "Social forestry and GIS." Journal of Forestry 90(12) p. 10-15.

Hauskeller, K. R. (1976). "Forest cooperatives - their role in the planning of forestry work." Forest Archive 47(10) p. 211-215.

There are problems in managing cooperatives (e.g. in Lower Saxony) in which ownership is not pooled, and in which individual owners retain the right to make major decisions on species, rotation, etc. It is difficult to collect information, to coordinate the use of labour and machinery, to arrange for joint marketing of produce, etc. It is suggested that this type of cooperative may create more problems than it solves.

Hirata, K. (1997). Small-scale forestry and roles of forestry cooperatives in Kyushu. Proceedings of IUFRO Symposium: Sustainable management of small scale forestry, Kyoto University, Graduate School of Agriculture, p. 36-40.

Hoffman, B. F., Jr. (1985). "Estimating production of forestry cooperative members". U.S. Department of Agriculture, Agricultural Cooperative Service. ACS Research Report 45. p. 15.

Ishii, U. a. A. K. W. (1997). Activities of forest cooperatives in Hokkaido and their role. Proceedings of IUFRO Symposium: Sustainable management of small scale forestry, Kyoto University, Graduate School of Agriculture, p. 180-184.

Ishii, Y. I. K. a. K.-w. A. (1995). Development of forest cooperatives and economical state of small forest owners in Hokkaido (Japan). Caring for the forest: Research in a changing world. Abstracts of invited papers IUFRO XX World Congress, Tampere, Finland, Vienna, IUFRO Secretariat, Federal Forest Research Institute. p. 237-238.

Izumi, S. (1992). "The goals of the Forest Owners' Co-op Associations." Review of International Co-operation 85(1) p. 33-36. Call Number: UW Suzzalo Periodicals HD2951. R4.

Jamieson, K. (1989). "Tree producer co-ops pack a market punch." New Zealand Forest Industries 20(12) p. 28-29. Call Number: TS800.F63.

Jones, S. B. (1994). "Ecosystem management on NIPFs: A mandate for cooperative education." Journal of Forestry 92(8) p. 14-15. Call Number: 634.905 J. On file? Y.

Kasahara, Y. (1986). "The present situation of Forest Owners' Cooperative in Japan". Japanese Forest Economic Society. The current state of Japanese forestry (V). p. 49-54.

Katsumata, Y. (1990). “Forestry cooperatives in Japan.” Forest News 4(2) p. 5-6. Call Number: SD144. N45 F67.

Kilander, K. (1987). “Cooperatives for the promotion of forestry in rural development.” Unasylva 39(3/4,157/158) p. 29-37. Call Number: 634.905 UN.

Kittredge, D. B., Jr. (1992). “Regional cooperation in forestry.” Extension Journal (Madison, WI) 30 p. 37-38.

Knight, R. L. a. P. B. L., Ed. (1998). Stewardship Across Boundaries. Washington, D.C., Island Press. p. 371. Call Number: HD 205 S74 1998.

Komaki, T. and K. Endo (1995). “Behaviors of forest owners regarding forest cutting and methods of revitalizing regional forestry - Examples of members of forest owners' cooperatives in Aomori Prefecture.” Journal of the Japanese Forestry Society 77(5) p. 437-447.
In Japanese with English summary

Krumpe, E. E., Cowles P. D., and K. L. McCoy (1994). "A telephone survey of social scientists conducting research or projects related to ecosystem management in the Pacific Northwest". Produced through a cooperative agreement between University of Idaho, Department of Resource Recreation and Tourism, and Pacific Northwest Forestry Sciences Lab. p. 52.

Kurtz, W. B. and T. D. Marty (1988). "The cooperative forest management program: suggestions for improvement". Columbia, MO. Univ Mo Columbia Agric Exp Stn. p. 14.

Lankford, L. (1994). “Forest Health on Nonindustrial Private Lands: Ecosystem Forestry from the Ground Up.” Journal of Forestry July, 94 . Call Number: 634.905 J. On file? Y.

Little, J. B. (1996). “Forest communities become partners in management.” American Forests 102(3) p. 17-19, 21, 40. Call Number: 634.905 AM. On file? Y.

Lo, S. L. (1980). “A study on the organization of forest cooperative management in Taiwan.” Quarterly Journal of Chinese Forestry 13(3) p. 1-24. Call Number: SDI.C8.
Data from 10 forest cooperatives (obtained from county government) and 344 stockholders of cooperatives were collected from July 1978 to March 1979. Cooperatives were found to exist on 2 scales - consisting of more than 500 or about 100 forest owners. Working capital was made up primarily of stocks from forest owners, loans from public and private institutions and government grants. About 63% of stockholders were farmers with their own land management activities. Data on the elasticity of factors of production (land, labour and capital inputs) indicated that some cooperatives (with an aggregate elasticity of more than 1) will encourage investment programmes.

Marchant, J. (1996). “Landowner associations: Who are we and why are we here?” National Woodlands 19(2) p. 6-8,12-13. Call Number: SD387.W7 N35.

Matthei, C. “Protecting Forestlands.” . On file? Y.

Morrow, C. E. and R. W. Hull (1996). “Donor-initiated common pool resource institutions: The case of the Yanesha Forestry Cooperative.” World Development 24(10) p. 1614-1657. Call Number: UW Suzzalo Periodicals - JV2. W67.

Myers, J. W., Jr. (1988). "Impact of forestry associations on productivity of the South's forests". U.S. Dept. of Agriculture. Miscellaneous Publication no. 1458. p. 29.

Noda, H. (1988). "Development and function of forest cooperatives after World War II. A case in Ehime prefecture". Bulletin of the Ehime University Forest. p. 1-113.
A discussion with particular reference to the organization of regional forestry, chiefly in the 1980s.

Ota, I. (1993). Depopulation in rural areas and the increasing role of forestry cooperatives in Japan. Proceedings of IUFRO Symposium Forestry and Rural Development in Industrialized Countries: Where are we going? Fredericton, Fredericton, N.B., Natural Resources Canada. p. 246-252.

Patil, V. (1992). "Tree-growing cooperative succeeds in India." Farm Forestry News 5(3) p. 1,3.

Rickenbach, M. G., D.B. Kittredge, D. Dennis, T. Stevens (1998). "Ecosystem Management: capturing the concept for woodland owners." Journal of Forestry 96(4) p. 18-24. Call Number: 634.905 J. On file? Y.

Sakai, M. (1993). "On the relationship between the revitalizing of smaller forest households and forest owners' cooperative activities". Bulletin-of-the-Kyushu-University-Forests. p. 55-76.
Relations between forest owners' cooperatives and household economic activities- either within forestry (silviculture, logging, wood utilization or marketing) or additional or alternate occupations - were analysed, based on data from a questionnaire survey of members of 21 forest cooperatives in Kumamoto and Oita Prefectures, Kyushu. Data are included on size of forest holding (34% of households had plots 1 to 5 ha in size), type of forest (often forest plantations, of sugi, Cryptomeria japonica, and hinoki, Chamaecyparis obtusa), silvicultural activities, timber sales, household consumption of wood, and the role of the cooperatives in timber sales. Some cooperatives manage more than 10 000 ha of forest, while others are small and have difficulty developing forest management strategies.

Sakanoue, N. (1997). Cooperative marketing by forest owners of lumber for wooden houses. Proceedings of IUFRO Symposium: Sustainable management of small scale forestry, Kyoto University, Graduate School of Agriculture, p. 80-83.

Sample, V. A. (1992). Building partnerships for ecosystem management on forest and range lands of mixed ownership. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD., p. 334-339. Call Number: 634.906 SOP.

Sample, V. A. (1994). "Building partnerships for ecosystem management on mixed ownership landscapes." Journal of Forestry 92(8) p. 41-44. Call Number: 634.905 J. On file? Y.

Sample, V. A. (1995). Building partnerships across boundaries and jurisdictions. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD., p. 335-338. Call Number: 634.906 SOP.

Sample, V. A. (1995). Partnerships for ecosystem management on mixed ownership landscapes. Trans North Am Wildlife and Natural Resources Conf, Washington, D.C., Wildlife Management Institute. p. 415-421. On file? Y.

Sample, V. A. (1996). Planning forest management to protect water quality on mixed ownership landscapes. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD., p. 70-74. Call Number: 634.906 SOP.

Sample, V. A. (1997). Zen and the art of collaborative forest management. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD., p. 60-63. Call Number: 634.906 SOP.

Saxena, R. (1996). "The Vatra Tree Growers' Cooperative Society". Cooperative management of natural resources. K. a. B. Singh, V. New Delhi, Sage Publications. p. 39-58. Call Number: UW suzzalo - HC433.5.C65 1996.

Siebert, S. F., Lassoie J. P. and Lapping M. B. (1986). "Fuelwood cooperatives: Their role and development in the northeastern United States." Northern Journal of Applied Forestry 3 p. 137-139. Call Number: SD1.N676.

Singh, K. and S. Subramaniam (1996). "People's participation in organising and managing Tree Growers' Cooperative Societies: A case study from Orissa (India)". Cooperative management of natural resources. K. a. B. Singh, V. New Delhi, Sage Publications. p. 59-73.

Singh, K. a. B. K. (1997). “Tree growers' cooperatives: Farm forestry in India.” Journal of Forestry 95(10) p. 32-35. Call Number: 634.905 J.

Ticknor, W. D. (1995). "A survey of selected forestland owners in south central Indiana on participation in landscape-scale programs". Purdue University Cooperative Extension Service, Forestry and Natural Resources. p. 9.

Viitala, E. J. (1996). “Assessing the effectiveness of non-profit forestry organisations: An ultimate goal approach.” Silva Fennica 30(4) p. 459-476. Call Number: 634.905 SI.

Washburn, M. P. (1996). Cross boundary management on nonindustrial private forests in Pennsylvania: A Vision for the Future. Symposium on non-industrial private forests: Learning from the Past, Prospects for the Future, Washington, D.C.

Williams, E. M. and P. V. Ellefson (1996). "Natural resource partnerships: factors leading to cooperative success in the management of landscape level ecosystems involving mixed ownership". Department-of-Forest-Resources,-University-of-Minnesota. p. 81.

Results are presented from a study to gather information on recent or existing partnerships. Partnerships are defined as 'a collaboration of government representatives and private industrial land owners, private nonindustrial landowners, community residents, and environmental or nongovernmental organizations, who meet as a planning group or task force to coordinate management activities for a specific area of land'. In order to facilitate more sustainable partnerships, six objectives were specified: identify and describe existing government-private partnerships; determine factors leading to successful partnerships; determine motivations and economic incentives to join partnerships; determine barriers to participation and threats to continuing partnerships; explore differences that may exist between partnership types; and gather and convey the advice of experienced partnership facilitators. Three case studies are examined, covering forest resource sustainability and protection of biodiversity; range land improvement for livestock and wildlife; and water quality improvement protecting endangered mussels.

Williams, E. M. and P. V. Ellefson (1997). “Going into partnership to manage a landscape.” Journal-of-Forestry 95(5) p. 29-33. Call Number: 634.905 J.

Forest ecosystems in the USA are rarely on land that belongs to a single owner. Instead, they are usually dominated by a patchwork of public and private landowners who have overlapping and sometimes conflicting interests and responsibilities. Partnerships between the various owners are often recommended as a solution to ecosystem problems that transcend boundaries. Forty partnerships were selected in 1995 and information from the chief spokesperson or lead facilitator was used to study the formation of partnerships, barriers to participation, their organizational structure and factors leading to success.

Yarrow, G. K. (1990). "Forms of business organizations with emphasis on landwoner cooperatives for natural resources". Business management and marketing: Organizations and records. West Virginia University, Extension Service. R.D. no. 763. p. 1-5. On file? Y.

Education

Anderson, S. (1992). Communicating forest stewardship by satellite videoconferencing to a nationwide audience. Proc-Soc-Am-For-Natl-Conv, Bethesda, MD., p. 448-452. Call Number: 634.906 SOP.

Anderson, S. (1993). "From studio to satellite: interacting with nonindustrial private forest owners." Journal of Forestry 91(10) p. 19-23. Call Number: 634.905 J.

Baldwin, S. B. and J. L. Haymond (1994). "A systems approach to communication behavior among scientists, foresters, and NIPF landowners." Southern Journal of Applied Forestry 18(4) p. 175-180. Call Number: SD1.S693.

Mail surveys during autumn 1989 were used to determine the communication behavior of scientists, foresters and landowners in Virginia, North Carolina, South Carolina and Georgia. The commonest information sources for scientists were other scientists, meetings and journals; the information output of scientists was primarily directed towards scientists. Nearly all foresters had contacts with non-industrial private forest (NIPF) owners; their commonest sources of information were other foresters, agency pamphlets and meetings. Their information output was mainly interpersonal communication. Over one-third of NIPF owners received no forest management information, other landowners being the commonest information source. It was concluded that technology transfer is progressively restricted as it moves from source to link to user, and that interaction between the 3 groups is limited.

Birch, T. (1986). "Communicating with Nonindustrial Private Forestland Owners: One-on-one too Slow? How about a multi-target - multi-media approach?" Journal of Forestry Dec, '86 . Call Number: 634.905 J. On file? Y.

Birch, T. a. N. A. P. (1986). "Communicating with Nonindustrial Private Forestland Owners: Getting Programs on Target and Using the Media to Carry the Message." Journal of Forestry Dec, '86 . Call Number: 634.905 J.

Birch, T. a. N. P. (1986). "Communicating with Nonindustrial Private Forest-land Owners: Getting Programs on Target". USDA - Forest Service. Northeastern Forest Experiment Station. Call Number: SD11.N57b. On file? Y.

Birch, T. W. and N. A. Pywell (1986). "Getting programs on target." Journal of Forestry 84(12) p. 27. Call Number: 634.905 J.

Blumenstock, B. (1987). Reaching the woodlot owners with the use of mass media. Joint FAO/ECE/ILO Committee on Forest Working Techniques and Training of Forest Workers., Rome?, p. 11.

Blumenstock, M. W. (1984). Yankee Woodlot--introducing awareness of values to woodlot owners in Maine. New forests for a changing world : proceedings of the 1983 Convention of the Society of American Foresters, Portland, Oregon, p. 638-640.

Broderick, S. H., David B. Kittredge, Daniel Decker, Nancy Connelly (1991). "Practicing Foresters Identify Research Needs: Northwestern Survey Locates Gaps in Information Flow." Journal of Forestry . Call Number: 634.905 J. On file? Y.

Burk, T. E. and S. D. Lime (1996). Distributing tactical forest planning information via the Internet. Internet applications and electronic information resources in forestry and environmental sciences: Proc. Int. Workshop, Joensuu, Finland, European For. Inst., EFI Proc. p. 77-88.

Cubbage, F. W. (1988). "Forestry technical assistance programs: research, education, and technology transfer". Washington, D.C. U S Dep Agric. p. 61-72.

Decker, D. J., J. P. Lassoie, et al. (1988). "Do workshops work? Woodland management evaluation." Extension Journal (Madison, Wis.) 27 p. 19-21.

Dirkman, J., Thomas Rumpf and Lloyd Irland (1986). “Communicating with Nonindustrial Private Forestland Owners: Market Penetration - How long will it take to saturate the NIPF market?” Journal of Forestry Dec, '86 . Call Number: 634.905 J. On file? Y.

Elwood, N. a. P. A. (1986). “Communicating with Nonindustrial Private Forestland Owners: The Woodland Workbook - Updating NIPF Owners in Oregon.” Journal of Forestry Dec, '86 . Call Number: 634.905 J. On file? Y.

Foulds, R. T., Jr. (1980). How well do we reach woodlot owners--east. Town meeting forestry: issues for the 1980s : proceedings of the 1979 convention of the Society of American Foresters., Washington, D.C.,, p. 261-262.

Frank, R. M., Jr. and T. G. Okeefe (1983). A transfer system to reach a selected audience: woodlot owners and mill managers. Proc Technol Transfer Soc Int Symp., Indianapolis, IN, p. 371-378.

Gasbarro, T. (1990). "Forestry assistance and education programs for Alaska forest landowners". University of Alaska, Cooperative Extension Service. p. 8.

Goff, G. R., D. J. Decker, et al. (1989). Evaluating forest owner workshops. Proc Soc Am For Natl Conv., Bethesda, Md., p. 363-367.

Hanley, D., David Baumgartner and Leila Charbonneau (1996). "Terminology for Forest Owners". WSU Coop Extension. On file? Y.

Harmon, A. H., Jones S. B. and J. C. Finley (1997). “Encouraging private forest stewardship through demonstration.” Journal of Forestry 95(6) p. 21-25. Call Number: 634.905 J. On file? Y.

Heitzman, E. (1994). “Stewardship and Private Lands.” Journal of Forestry Aug, 94 . Call Number: 634.905 J. On file? Y.

Hino, J. C. and E. C. Jensen (1996). “Science-based TV spots: Educating the public about forestry.” Journal of Applied Communications 80(1) p. 5-19.

Hudson, N. W. (1980). How can state, federal and private foresters help improve communications with woodlot owners. Town meeting forestry: issues for the 1980s : proceedings of the 1979 convention of the Society of American Foresters, Washington, D.C., p. 269.

Kingsley, N., Samuel Brock and Paul DeBald (1988). “Focus Group Interviewing Applied to Retired West Virginia Nonindustrial Private Forest Landowners.” Northern Journal of Applied Forestry May, 88 . Call Number: SD1.N676. On file? Y.

Kuhns, M., Mark Brunson and Scott Roberts (1998). “Landowners' Educational Needs and How Foresters can Respond.” Journal of Forestry Aug, 98 . Call Number: 634.905 J. On file? Y.

Magill, A. W. (1991). “Barriers to effective public interaction.” Journal of Forestry 89(10) p. 16-18. Call Number: 634.905 J.

Marsinko, A. P. C., J. H. Stevens, Jr., et al. (1988). "Targeting forest landowners". Department of Forestry, Clemson University. p. 11.

A survey was carried out of nonindustrial private forest (NIPF) landowners in South Carolina in 1983 and 1984. Landowners were asked about their sources of information regarding forest management. The most frequently cited source of information was magazines (26.6% of respondents). Seven magazines reached at least 10 percent of the respondents receiving magazines. Progressive Farmer reached 29% of the respondents receiving magazines - a group that consisted of fairly active forest managers. Southern Living reached 18.3% of the respondents - a group more likely to be female and less likely to have made plans for

their forest land. Hunting, fishing and forestry-related magazines reached relatively few respondents. Newspapers were the second most cited source of information (17.8%), followed by State foresters (12.1%), television (11.6%) and forest consultants (8.3%). Some 24% of respondents cited various individuals; many of these individuals were not professional foresters but friends or relatives.

McKinley, C. R., Sidebottom J. R., and J. H. Owen (1996). "The Process of Forestry Extension Education: Specialty Tree Production in North Carolina, United States." Unasylva 47(184) p. 38-43. Call Number: 634.905 UN.

O'Donnell, E. M. (1993). "VIPs take to the woods." American Forests 99(11/12) p. 29-30, 60. Call Number: 634.905 AM. On file? Y.

Pywell, N. a. M. F. (1986). "Communicating with Nonindustrial Private Forestland Owners: Forinsy - On Line in Florida." Journal of Forestry Dec, 86 . Call Number: 634.905 J. On file? Y.

Reed, S., Gregory Brown, David Radford and Carl Wegner (1986). "Communicating with Nonindustrial Private Forestland Owners: Focus Group Interviewing." Journal of Forestry Dec, 86 . Call Number: 634.905 J. On file? Y.

Rom, E. A., J. C. Finley, et al. (1990). "Using direct mail in extension programming for nonindustrial private forest landowners." Northern Journal of Applied Forestry 7(4) p. 171-174. Call Number: SD1.N676. On file? Y.

Four pilot schemes for disseminating forest management information and advice to nonindustrial private forest (NIPF) landowners (350 in each group, plus 350 control) were conducted in Pennsylvania. Method of contact (targeting versus self-selection) and type of information (economic versus multiple-use) varied, and the audience reached by each approach was defined as the landowners who completed and returned a mail questionnaire. Results were: targeting reached more people than self-selection; self-selected or targeted landowners who stayed in the programme tended to have had some forest management education. On the whole, the direct mail approach increased NIPF landowner knowledge of forest management, but was less effective in developing intent to manage.

Rosen, B. N. and H. F. Kaiser (1988). "Marketing forest management to nonindustrial private forest landowners: a field experiment." Northern Journal of Applied Forestry 5(4) p. 240-241, 243-245. Call Number: SD!.N676.

Sampson, N. (1990). Challenges and Opportunities for Natural Resource Programs to Assist Private Landowners. Conference Proceedings: Income Opportunities for the Private Lamndowner through Management of Natural Resources and Recreational Access, On file? Y.

Snyder, L. B. and S. H. Broderick (1992). "Communicating with woodland owners." Journal of Forestry 3(33-37) . Call Number: 634.905 J. On file? Y.

A brief account is given of the Coverts Project established in 1984 in Vermont and Connecticut. In this project, owners of private woodland volunteer to be trained so that they can implement management techniques on their own land and advise other landowners on woodland management. A survey was undertaken in 1987 to assess the effectiveness of the project in Connecticut. Volunteers who were trained in 1985 were asked to rate the success of their outreach efforts and landowners in regions with and without volunteers were asked about project awareness and management activities. Results showed that the project is having mixed success. Only 87 volunteers had been trained at the time of the study, but they had reached about 2500 woodland owners. The volunteers had some success in promoting adoption of forest management plans.

West, P. C., J. M. Fly, et al. (1988). "The communication and diffusion of NIPF management strategies." Northern Journal of Applied Forestry 5(4) p. 265-270. Call Number: SD1.N676.

Results from a 1983 questionnaire survey of 220 nonindustrial private forestlands (NIPFs) in N. Lower Michigan, USA are presented, and used to discuss the role of communication strategies in intensifying management of NIPFs. The survey concluded that interpersonal influence (friends, neighbours,

relatives) was as important as contact with professional foresters for NIPF management advice. Peer influence was a significant source of advice for timber management or harvesting, proving as effective as private sector foresters' advice and more effective than state or federal professional foresters' advice. The authors suggest that lay peer influence and personal contact should be considered when formulating communication strategies for NIPF.

Zeichick, H. H. a. T. G. O. K. (1983). “A new education system for woodlot owners.” Journal of Forestry 81(4) p. 237-238. Call Number: 634.905 J. On file? Y.

Forest Management

(1982). "Measuring Trees". Pacific Northwest Extension. On file? Y.

(1991). "Managing Forestlands in Washington: An Illustrated Guide to Forest Stewardship". WSU Coop Extension. On file? Y.

(1996). "Washington State Forest Stewardship Plan Guidelines". Washington State Department of Natural Resources. On file? Y.

(1997). "Forest Practices Illustrated". Washington Stae Department of Natural Resources. On file? Y.

(?). "Washington State Stewardship Incentive Program (SIP)". Washington Stae Department of Natural Resources. On file? Y.

Barbour, R. J., S. Johnston, et al. (1997). "Simulated stand characteristics and wood product yields from Douglas-fir plantations managed for ecosystem objectives." Forest Ecology and Management 91(2-3) p. 205-219.

Hundreds of thousands of hectares of Douglas fir (Pseudotsuga menziesii) plantations in coastal forests in the US Pacific Northwest have been established over the past 40 years. Density management regimes designed to increase structural and compositional diversity in these plantations are being tested and implemented on an operational scale, in order to satisfy goals of ecosystem management. These regimes are designed to promote various tree and stand characteristics, such as trees with large limbs, stands with multi-layered canopies, and dense unthinned patches. Changes in forest management policy associated with these types of regimes raise questions about whether it is possible to manage for both ecosystem values and timber production. State-of-the-art growth models were used to simulate stand development and wood product yields under several silvicultural prescriptions. The results indicated that timing and intensity of early thinnings are critical in determining both stand structure and wood quality. It is concluded that it should be possible to manage Douglas fir plantations to provide a high degree of structural diversity, and wood products with a quality similar to that grown in many industrial plantations.

Becker, J. C., A. Ferrise, et al. (1989). Legal issues. Eastern U.S. Conference on Income Opportunities for the Private Landowner through Management of Natural Resources and Recreational Access, Wheeling, WV, West Virginia University, Extension Service. p. 74.

Bender, G. (1994). "Weldwood and wildlife: An example of leadership in forest stewardship in the private sector." Forestry Chronicle 70(5) p. 543-545.

Berg, D. R. (1995). "Riparian silvicultural system design and assessment in the Pacific Northwest Cascade Mountains, USA." Ecological Applications 5(1) p. 87-96.

Bettinger, P. and R. J. Alig (1996). "Timber availability on non-federal land in western Washington: implications based on physical characteristics of the timberland base." Forest Products Journal 46(9) p. 30-38.

The timberland area under non-federal ownership in western Washington is characterized by ground slope class, elevation, timber size, age, silvicultural treatment opportunities, and ownership. Non-industrial private forest (NIPF) timberland is generally located on gentler slopes and lower elevations than are all other ownerships implying a potential advantage in logging and transportation costs. Opportunities to increase growth on NIPF land are mainly through clearcutting and stand conversion. Timber on forest industry lands has a significantly younger age-class distribution than timber on land that is owned by NIPF landowners and the Department of Natural Resources in the state of Washington; this is a reflection of the higher management intensity being implemented by forest industry. Opportunity to increase growth rates on forest industry timberland is mainly by precommercial thinning. And the distribution of NIPF and forest industry harvests has historically been concentrated more in the lower slope classes than the corresponding timberland base. The physical characteristics of the timberland base in western Washington, along with landowner behaviour patterns, may affect future non-federal timber supplies by influencing management

regimes, access to timberland and owner's responses to urban pressures. Although NIPF timberland owners may have a cost advantage with respect to the physical characteristics of the timberland base, they may be highly susceptible to a loss in timberland area from regulatory and land-use pressures. As a result, future timber supply prospects may decrease even further than recent projections suggest.

Brandenburg, A. M., M. S. Carroll, et al. (1995). "Towards successful forest planning through locally based qualitative sociology." Western Journal of Applied Forestry 10(3) p. 95-100.

Generations of public land managers have understood the political importance of direct contacts with a variety of constituents. This article argues for a more formal systematic use of face to face interactions and information gathering as a means of achieving more socially acceptable resource management.

Christiansen, E. C. and S. G. Pickford (1991). "Natural abatement of fire hazard in Douglas-fir blowdown and thinning fuelbeds." Northwest Science 65(4) p. 141-148.

The changes over time in fuelbed loading and depth in precommercially thinned and windthrown low altitude stands of Douglas fir (Pseudotsuga menziesii) were investigated in the Bull Run Watershed, Oregon, using standard fuel inventory techniques. Non-linear least squares regressions were fitted to the resulting data. Slash from precommercial thinning lost half of its original loading and depth within 2 yr. No foliage was retained on twigs and branches after 1 yr. Changes in fuels from windthrown trees were similar to those in slash, except that more material was present initially. Fine fuels (<3 inches in diameter) decreased to background levels within 2-4 yr, but large fuels persisted for longer. Sound logs became rotten after about 80 yr. The study confirmed that the fire hazard after precommercial thinning slash and wind throw was abated after 3 yr.

Cubbage, F. W. and J. E. Gunter (1987). "Conservation reserves." Journal of Forestry 85(4) p. 21-27. Call Number: 634.905 J.

Halpern, C. B. and T. A. Spies (1995). "Plant species diversity in natural and managed forests of the Pacific Northwest." Ecological Applications 5(4) p. 913-934.

Heilman, P., R.F. Stettler, Don Hanley and Richard Carkner (1995). "High Yield Hybrid Poplar Plantations in the Pacific Northwest". WSU Coop Extension. On file? Y.

Helliwell, D. R. (1984). Economics of woodland management. Chichester [West Sussex], Packard. p. 63.

Kingery, J. L., R. T. Graham, et al. (1994). Animal use and reforestation. Interior cedar-hemlock-white pine forests: ecology and management. Symposium proceedings, Spokane, Washington, p. 207-211.

A discussion of the incorporation of livestock grazing in silvicultural prescriptions for the cedar/hemlock/white pine [Thuja plicata/Tsuga heterophylla/Pinus monticola] forests of the interior west of the USA.

Krueger, W. C., B. F. Roche, Jr., et al. (1983). Cattle grazing in managed forests. Forestland grazing, p. 29-41.

Research since 1971 on cattle grazing forested rangelands in NE Oregon and 20 years of grazing a forest plantation is summarized. The results are reported in the following sections: succession; effects of grazing; response by habitat type; response to sowing; herbage production; utilization of herbaceous vegetation; tree responses; and management inferences.

Magill, A. W. and R. B. Litton, Jr. (1986). "A color measuring system for landscape assessment." Landscape Journal 5(1) p. 45-54.

Martin, J. (1994). "Determine your basis...and keep more timber income". University of Wisconsin-Madison, Cooperative Extension Programs. p. 4.

McConnell, S., P. Morgan, et al. (1994). Landscape planning for ecosystem sustainability. Interior cedar-hemlock-white pine forests: ecology and management. Symposium proceedings, Spokane, Washington, p. 179-185.

Analysing forest landscapes at hierarchical spatial and temporal scales, and direct integration of a broader suite of ecological processes into management activities, is likely to result in forest management systems that render forests more resilient in the long term. As part of the Willow Creek Demonstration Area project in northern Idaho, a landscape planning methodology is being developed. This paper describes some of the steps taken during the planning process.

Mosher, M. a. K. L. (?). "Trees of Washington". WSU Coop Extension. On file? Y.

Pilarski, M. e., Ed. (1994). Restoration Forestry: An International Guide to Sustainable Forestry Practices. Kivaki Press. On file? Y.

Redmond, C., F. W. Cubbage, et al. (1990). "An economic analysis of the conservation reserve program in south Georgia." Southern Journal of Applied Forestry 14(3) p. 137-142. Call Number: SD1.S693.

Rochelle, J. A. a. M. D. P. (1990). The Washington State Timber, Fish and Wildlife Program: A cooperative approach to forest practices. Forestry on the frontier: Proceedings of the 1989 Society of American Foresters National Convention, Bethesda, MD, Society of American Foresters. p. 144-147.

Romm, J. (1998). "The Business of Sustainable Forestry: Case Studies". The Sustainable Forestry Working Group. On file? Y.

Sidle, R. (1980). "Impacts of Forest Practices on Surface Erosion". Pacific Northwest Extension. On file? Y.

Vysatova, R. a. L. G. (1998). "A Guide to USDA and Other Federal Resources for Sustainable Agriculture and Forestry Enterprises". USDA in collaboration with The Michael Fields Agricultural Institute. On file? Y.

Wallinger, S. (1995). "A commitment to the future: AF&PA's sustainable forestry initiative." Journal of Forestry 93(1) p. 16-19. Call Number: 634.905 J.

Harvesting

Aho, P. E., G. Fiddler, et al. (1983). "How to reduce injuries to residual trees during stand management activities". USDA Forest Service, Pacific Northwest Forest and Range Experiment Station. General Technical Report No. PNW-156. p. 17. Call Number: SD11.A479.

Barger, R. L. (1986). "Non-industrial private forest lands. Part III - Harvesting and utilization considerations for forest landowners". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(5). p. 8-13.

Bettinger, P. and L. D. Kellogg (1993). "Residual stand damage from cut-to-length thinning of second - growth timber in the Cascade Range of western Oregon." Forest Products Journal 43(11/12) p. 59-64.

Residual stand damage was measured on 25 percent of an area that had been thinned with a cut-to-length logging system. Total damage (scar area) per acre was less than in any similar study in the Pacific Northwest, although 39.8 percent of the residual trees sustained some damage. Only 0.8 percent of the trees, however, sustained major damage. Western hemlock was more susceptible to damage than Douglas-fir. Most of the damage occurred within 15 feet (4.57 m) of a trail centerline and originated within 3 feet (0.91 m) of the groundline. Early summer logging may have resulted in a higher level of damaged trees than might occur during other seasons. Future volume loss due to decay is likely to be minimal because a low percentage of scars were considered vulnerable to wood-decaying fungi.

Blinn, C. R. and J. Vandenberg Daves (1993). "Evaluation of a computerized timber inventory system for nonindustrial private forest landowners." Northern Journal of Applied Forestry 10(3) p. 123-127. Call Number: SD1.N676.

Foresters in many Minnesota counties are interested in gaining access to an automated land use inventory of NIPF lands. The Private Lands Information System (PLIS) was developed to provide field foresters in three Minnesota counties with access to a map-based inventory of NIPF timber stands. An evaluation of that system indicated that most users were pleased with its performance as a tool for targeting areas for management assistance, for working more effectively, and for addressing new issues. PLIS was less expensive to develop initially and to reinventory, on a per land unit basis, than the system which is being applied to state and county lands in Minnesota. However, there is no evidence to suggest which system is more cost effective. Up-front planning is required to develop a system that meets user needs.

Gansner, D. A., T. W. Birch, et al. (1990). "Cutting disturbance on New England timerlands." Northern Journal of Applied Forestry 7(3) p. 118-120. Call Number: SD1.N676.

Recently completed forest inventories and woodland owner surveys for each of the six New England states have given us insight into contemporary harvesting activities in the region. About half of the private woodland owners have harvested timber from their holdings at some time in the past. Still, timber harvesting continues to be a fairly concentrated activity. Remeasured plot data indicate that only 30% of the timberland had cutting disturbance between the last two inventories. And two-thirds of the cutting took place on one-tenth of the timberland. Economics more than textbook silviculture determines the kind of cutting that takes place. The good housekeeping associated with better silviculture could result in dramatic improvements in production. Even so, New England's woodlands have held their own and appear to be in relatively good shape. Physical supplies of timber reveal a potential opportunity for significant expansion in wood use.

Jemison, G. M., M. S. Lowden, et al. (1974). "Environmental effects of forest residues management in the Pacific Northwest. A state-of-knowledge compendium". Portland, OR. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station. p. 517. Call Number: SS11.A479.

Contains 19 articles in which the effects of forest residues (from logging, road construction, land clearing, thinning and pruning, etc.) and of residue treatments are examined in relation to various components of the forest environment and forestry practices: Management and research implications (G.M. Jemison; M.S. Lowden); Soil microbes (W.B. Bollen; 89 ref.); Soil processes and introduced chemicals [fertilizers, pesticides, fire retardants] (D.G. Moore; L.A. Norris; 69 ref.); Soil stability and water yield and quality (J. Rothacher; W. Lopushinsky; 52 ref.); Fish habitat (G.W. Brown; 20 ref.); Air quality influences [with special reference to smoke from wildfires and prescribed burning] (O.P. Cramer; 77 ref.); Fire hazard

and conflagration prevention (R.E. Martin; A.P. Brackebusch; 47 ref.); Recreational and esthetic considerations (J.A. Wagar; 26 ref.); Brushfield reclamation and type conversion (H. Gratkowski; 48 ref.); Regeneration and growth of Coastal Douglas-Fir (R.E. Miller; R.L. Williamson; R.R. Silen; 87 ref.); Regeneration and growth of west-side mixed conifers (R.H. Ruth; 39 ref.); Natural regeneration of east-side conifer forests (K.W. Seidel; 50 ref.); Artificial regeneration (J.W. Edgren; W.I. Stein; 115 ref.); Microclimate (W.B. Fowler; 31 ref.); Animal populations and damage (E.J. Dimock II; 113 ref.); Habitat of grazing animals (G.A. Garrison; J.G. Smith; 22 ref.); Decay (P.E. Aho; 60 ref.); Insects and other arthropods (R.G. Mitchell; C. Sartwell; 76 ref.); and Diseases (E.E. Nelson; G.M. Harvey; 24 ref.). A glossary and a list of metric conversion factors are included.

Lanford, B. L., J. H. Wilhoit, et al. (1991). “Forwarder system development for non-industrial private forest (NIPF) applications.” Papers of the American Society of Agricultural Engineering (91-7509) p. 20.

LeDoux, C. B. and T. C. Adams (1983). "Harvesting residue from thinnings for use as an energy source". Portland, Or. Pacific Northwest Forest and Range Experiment Station United States. Bonneville Power Administration. p. 23.

Lyon, J. P., F. W. Cubbage, et al. (1987). “Systems for harvesting small forest tracts.” American Society of Agricultural Engineering, Microfiche Collection (Microfiche no. 87-1565) p. 24.

Marcouiller, D., S. Anderson, et al. (1990). "Safe chain saw operation". Stillwater, OK. OSU Ext Facts Coop Ext Serv Okla State Univ. p. 4.

Myers, R. K. and J. R. Seifert (1992). "Tips on how to get the most from your timber harvest". West Lafayette, Ind. FNR Purdue Univ Coop Ext Serv. p. 4.

Niemi, K. C. (1990). “Maximizing returns for NIPFL.” Consultant 35(1) p. 12-14.

Pope, P. E., B. C. Fischer, et al. (1986). "Timber harvesting and logging practices for private woodlands". West Lafayette, Ind. FNR Purdue Univ Coop Ext Serv. p. 7.

Stokes, B. J. and O. A. Clair (1988). "Small tractor skidding attachments rated for private woodlot use". New Orleans, La. p. 9. Call Number: SD11.A583.

Incentives

Best, C. L. and L. A. Wayburn (1996). Conservation easements for production forestlands: Financial incentives for forest protection. Proceedings of the Conference on Coast Redwood Forest Ecology and Management, Arcata, CA, University of California, Cooperative Extension, Forestry. p. 87-89.

Bliss, J. C. and A. J. Martin (1990). "How tree farmers view management incentives." Journal of Forestry 88(8) p. 23-29, 42. Call Number: 634.905 J. On file? Y.

Brenneman, R. L. a. S. M. B., Ed. (1984). Land Saving Action: a written symposium by 29 experts on private land conservation in the 1980s. Covelo, CA, Island Press. p. 239. Call Number: HD205.L353 1984. On file? Y (1 chapter on "Protecting Forestlands").

Center, K. (1995). "The Keystone Dialog on Incentives for Private Landowners to Protect Endangered Species: final report". Keystone, CO. The Keystone Center. p. 47. Call Number: QL84.2.K49 1995. On file? N.

De Steiguer, J. E. (1984). "Impact of cost-share programs on private reforestation investment [Government incentives, forestry investment models]." Forest Science 30(3) p. 697-704. Call Number: SD1.F69.

Dennis, D. F. and P. E. Sendak (1991). "An alternate property tax program requiring a forest management plan and scheduled harvesting". Broomall, PA. U S Dep Agric For Serv Northeast For Exp Stn. p. 15-22. Call Number: SD11.N57a.

Ellefson, P. V. and C. D. Risbrudt (1987). "Forestry incentive program investments in the north: retention rates for acres treated in 1974." Northern Journal of Applied Forestry 4(3) p. 133-135. Call Number: SD1.N676.

Hoover, W. L. (1996). "Timber tax management for tree farmers". Purdue University, Cooperative Extension Service, Forestry and Natural Resources.

Johnson, K. (1995). "Building Forest Wealth: Incentives for Biodiversity, Landowner Profitability, and Value Added Manufacturing". Washington Forestry Working Group, Northwest Policy Center, University of Washington. On file? Y.

Kilgore, M. A., P. V. Ellefson, et al. (1996). "Innovative forestry initiatives: Minnesota prepares for the future." Journal of Forestry 94(1) p. 21-25. Call Number: 634.905 J.

Lacy, S. E. (1993). "Forest Stewardship and the Stewardship Incentive Program: New opportunities for forestry". Enhancing biodiversity in the Northeast through management of early-successional forests. Ithaca, NY, Cornell University, Cooperative Extension. p. 25.

Malmsheimer, R. a. D. F. (1998). "The Right to Practice Forestry: Laws Restricting Nuisance Suits and Municipal Ordinances." Journal of Forestry Aug, 98 . Call Number: 634.905 J. On file? Y.

Rathke, D. M. and M. J. Baughman (1996). "Influencing nonindustrial private forest management through the property tax system." Northern Journal of Applied Forestry 13(1) p. 30-36. Call Number: SD1.N676. On file? Y.

Minnesota currently offers property tax relief to private woodland owners through the 2b timberland class in the state's modified ad valorem tax system, and through the Tree Growth Tax Law (TGTL), a fixed rate, productivity tax. Enrollment in both these laws has dramatically increased in recent years, while the average tax payment has declined in both real and nominal dollars. A mail survey of nonindustrial private forest landowners found that participants in the TGTL generally pay much lower taxes than those in the ad valorem tax classes, and TGTL lands appear to be more intensively managed for timber. However, the TGTL's incentive for timber management may be its criteria for enrollment, not the

tax rate. This study makes a strong case for requiring a management plan in order to be eligible for a lower tax rate.

Skinner, L. A. (1978). Land-use Management at the Urban Rural Fringe: a look at Transferable Development Rights. Forest Resources. U of Washington. p. 62. Call Number: SD121.Th26224. On file? N.

Stevens, W. B. e. (1985). A focused discussion of assistance and incentives for private forest owners: Proceedings of a special meeting of the Michigan Forest Products Industry Development Council held July 11, 1985. p. 116.

Stier, J. C., D. E. Moyle, et al. (1988). "An analysis of tax savings under Wisconsin's new Managed Forest Law." Northern Journal of Applied Forestry 5(2) p. 141-144. Call Number: SD1.N676.

Syme, J. H. and C. R. Duke (1994). "Market-oriented strategy for forest-based rural economic development." Forest Product Journal 44(5) p. 10-16.

Conventional economic development strategies have been unsuccessful in rural areas due to an inappropriate set of assumptions. Furthermore, specific strategies for forest-based economic development have not been formulated. This study developed a market-oriented strategic approach for forest-based economic development in rural sectors of the South. To illustrate the approach, a heavily-forested rural two-county subregion in South Carolina was targeted for analysis. The subregion has a large timber resource, but has only a small volume of forest products manufacturing within or near the subregion. The subregion's objectives, resources, and capabilities were analyzed in depth. Potential markets for wood products that could be manufactured in the subregion were identified and analyzed. Target markets and their highest-potential wood products were selected, based on their best fit with the subregion's capabilities. A unique strategy was formulated for carrying out the forest-based economic development program in the subregion, based on attracting a planned set of wood products processing businesses to create a manufacturing network. This approach should be applicable to other locations in the South. The proposed manufacturing network, including both new and existing forest-related businesses, focused on specific product businesses and provided an opportunity for member firms to gain and sustain a competitive advantage against competitors outside the network.

Trust, M. L., Ed. (1982). Private Options: tools and concepts for land conservation. Covelo, CA, Island Press. p. 292. Call Number: HD191.P74 1982. On file? N.

Warren, D. (?). "Conserving Land in King County: a Landowners Guide". Vashon-Maury Island Land Trust. On file? Y.

Marketing

Baumgartner, D. M. and H. M. Jones (1981). "Marketing woodland products". Pullman, WA. Wash State Univ Coop Ext Serv. p. 4.

Beckwith, J. R., III (1990). "Marketing and harvesting timber". Forestry on a budget. University of Georgia, Cooperative Extension Service. Bulletin no. 1032. p. 36-38.

Behr, B. (1991). Harvesting and marketing timber. Woodland Owners and Users Conference, St. Paul, MN, MN Department of Natural Resources, UMN Extension Service and College of Natural Resources, MN Forestry Association. p. 90-94.

Beier, R. J. (1984). "Marketing forest products for woodland owners." Timber Producer 10 p. 36-38.

Bennett, M. and D. A. Cleaves (1997). "The effects of marketing practices on stumpage returns in nonindustrial private forest timber sales in western Oregon." Forest Products Journal 47(5) p. 23-28.

Betts, A. and J. e. Claridge (1994). New markets for old Woods. New markets for old Woods, University of Surrey, Cambridge, UK, p. 155.

Blatner, K. A., R. L. Govett, et al. (1987). "Forest products importers of the Pacific Rim". Pullman, Wash. Wash State Univ Coop Ext Serv. p. 30.

Boutard, A. (1990). A market for immature timber: increasing the liquidity of NIPF timberland investments. Proceedings of the Society of American Foresters National Convention, Bethesda, Md., p. 593-594. Call Number: 634.906 SOP.

Brinker, R. W. and J. C. Bliss (1991). "Selling timber successfully". Auburn, AL. Ala Coop Ext Serv Auburn Univ. p. 4.

Cleaves, D. A. (1993). Selling timber and logs: Seven steps to success. Oregon State University Extension Service. p. 33.

Coen, J. A. S. C. and J. F. Guenthner (1992). Market opportunities: Hybrid poplars. University of Idaho, Agricultural Extension Service. p. 4.

Fischer, B. C. (1983). Marketing timber. West Lafayette, Ind., Purdue University Coop Ext Serv. p. 11.

Hyder, A. S., L. Lonnstedt, et al. (1994). "Outline of accounting for non-industrial private woodlots." Silva Fennica 28(2) p. 115-137. Call Number: 634.905 SI.

For non-industrial private forest (NIPF) owners, forest land with its timber production is an example of a capital asset. Developments in the asset's value and yield depend not only on forest management but also on other factors that the owner cannot control, e.g. timber prices and the production circumstances, such as soil and climate. One important basis for decision making related to management strategy and, in the short term, to cutting and silvicultural activities is economic analyses and accounting. The owner has to decide whether to invest more in his property (planting, cleaning, building of forest roads) or disinvest (sell timber or the holding). The owner has to find ways to increase revenue and cut costs. This is particularly important given the economic conditions facing forestry in, for example, Finland and Sweden in the early 1990s. However, generally accepted accounting practices for NIPF owners are lacking. A proposal is outlined for a profit and loss account and balance sheet for NIPF holdings with a view towards increasing economic awareness among private owners. Key concepts are net profit of the enterprise and calculated profit of the property. Other profit measurements that are used are gross margin, forestry margin, operating margin and operating profit. Calculated profit is based on adjusted net profit. The main concern, however, is to consider the change in the holding's market value caused by changes in stock volume, quality and price. The contents of the accounting framework developed here are applied to

three management strategies. The return on investment (ROI) of forestry is compared with other investment alternatives.

Laursen, S. B. (1986). "The timber market: How it works and how to make it work for you". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(1). p. 3-5.

McMahon, R. O. (1989). "Developing a marketing strategy for woodland owners: Initital considerations." Practical Forestry 1(2) p. 36-38.

Meikle, A. S. C. (1989). Woodland produce: Markets and marketing. Cumbrian Woodlands: Past, present and future, London,

Milton, F. T. a. M. D. (1984). The basic elements of marketing timber. Woodland Owners and Users Conference, St. Paul, MN, Univ. of MN\Minnesota, Office of Special Programs. p. 12-26.

Murn, T. (1993). Harvesting and marketing private timber. Woodland Owners and Users Conference, Duluth, MN, Minnesota Dept. of Natural Resources, University of Minnesota Extension Service. p. 67-72.

Perkey, A. W. (1990). "Marketing alternatives for white pine plantations in Ohio." National Woodlands 13(2) p. 18-19. Call Number: SD387.W7 N35.

Prosek, C. a. B. B. (1986). The marketing and harvesting of aspen. Woodland Owners and Users Conference, Univ. of Minnesota, Office of Special Programs.

Schlosser, W., David Baumgartner, Donald Hanley, Steven Gibbs and Vincent Corrao (1996). "Managing Your Timber Sale". Washington State University Cooperative Extension. On file? Y.

Svensson, J. (1997). Risk preferences and investment alternatives among non-industrial private forest owners. Acta-Universitatis-Agriculturae-Sueciae -Silvestria. 1997, No. 48, 159 pp.; 80 ref. Thesis.

The aim of this thesis was to illustrate how the capital of the Non-Industrial Private Forest (NIPF) owner should be divided to achieve as high return as possible. Two empirical surveys were undertaken concerning the risk preferences of NIPF owners. The first survey was made as a broad telephone interview about risk preferences and included 130 NIPF owners. The second survey, which included 40 NIPF owners, was carried out in order to measure risk attitudes among the forest owners. In an interview, each forest owner made his choice among alternatives with a risky outcome. A utility function is estimated for each forest owner. The estimated risk attitudes are used in a quadratic optimization model, which estimates an optimal portfolio of possible assets. This maximization is made with respect to the return and risk of the different assets. The estimated risk attitude determines to what extent risk should be taken into consideration. Possible assets in the optimization are forestry investments, stock investments and investments in two branches of agriculture-grain and milk production. Bank account was also a possible asset.

Walker, W. (1994). Marketing of woodland products from woods. New Markets for Old Woods, University of Surrey, Cambridge, UK, p. 118.

Wiley, M. (1985). Timber marketing basics. Woodland Owners and Users Conference, St. Paul, MN, p. 62-71.

Winterhalter, D. (1994). "Consumer perceptions of forest sustainability and willingness to pay." Woodland Steward 3(1) p. 1,4-5.

Regulation

Cubbage, F. (1991). "Public Regulation of Private Forestry." Journal of Forestry Dec, '91 . Call Number: 634.905 J. On file? Y.

Cubbage, F. W. and W. C. Siegel (1985). "The law regulating private forest practices." Journal of Forestry 83(9) p. 538-545. Call Number: 634.905 J.

Ellefson, P. V., A. S. Cheng, et al. (1997). "Regulatory programs and private forestry: state government actions to direct the use and management of forest ecosystems." Society and Natural Resoures 10(2) p. 195-209.

Salazar, D. a. F. C. (1990). "Regulating Private Forestry in the West and South: Two Policy Models." Journal of Forestry Jan, 90 . Call Number: 634.905 J. On file? Y.

Siegel, W. (1989). "Tax tests for woodland owners." American Forests 95(1/2) p. 34-35, 72-73. Call Number: 634.905 AM. On file? Y.

Watkins, C. (1983). "The public control of woodland management." Town Planning Review 54(4) p. 437-459.

Public criticism of woodland change in the UK has focussed firstly upon its aesthetic effects (especially the afforestation of large aeas of upland Britain and the replanting of existing broadleaved woodland with conifers) and secondly upon the effects of woodland change on wildlife conservation, particularly in relation to ancient woodland. This paper outlines 3 voluntary modes of public intervention in woodland management - namely, public ownership, grants and tax concessions. The development and use of the present system of compulsory controls through felling licences and tree preservation order is discussed, using results from a study of post-war woodland change in Nottinghamshire. Finally, the planning implications of the whole range of public interventions are considered.

Silviculture

"Port-Orford Cedar Root Disease in Southwest Oregon". Unpublished report prepared by Southwest Oregon Forest Insect and Disease Technical Center. On file? Y.

Bledsoe, C. S. (1981). "Municipal sludge application to Pacific Northwest forest lands". Seattle, Wash. University of Washington. Center for Ecosystem Studies.
Contribution (University of Washington. Institute of Forest Resources). 41. p. 155. Call Number: SD408.M85.

Curtis, R. O. (1995). "Extended rotations and culmination age of coast Douglas-fir: old studies speak to current issues". Portland, OR. United States Department of Agriculture, Forest Service, Pacific Northwest Research Station. p. 49. Call Number: SD11.A4853.

Curtis, R. O., D. D. Marshall, et al. (1997). "LOGS--a pioneering example of silvicultural research in coast Douglas-fir." Journal of Forestry 95(7) p. 19-25. Call Number: 634.905 J.

Deters, M. E. "Silvicultural aspects of woodland management in southeastern Minnesota". St. Paul, MN. University of Minnesota, Agricultural Experiment Station. p. 71.

Drew, T. J. and J. W. Flewelling (1979). "Stand density management: an alternative approach and its application to Douglas-fir plantations." Forest-Science 25(3) p. 518-532. Call Number: SD1.F69.

A method of viewing stand density as it relates to vol. production and tree size is developed in the form of a simple density management diagram (graph of mean tree vol. versus stand density). Examples of trends are given for different management regimes in 2 Douglas-fir plantations in New Zealand (Golden Downs and Kaingaroa) and one at Blue Mountain, western Washington. Three prominent points in stand development (crown closure, imminent competition/mortality, and max. size/density relationship) are defined in terms of tree size and stand density, and their implication for stand dynamics is discussed. A relative density index is presented as a basis for quantifying tree growth and stand yield as a function of density, and the balance between maximizing individual tree size or stand yield is considered. From authors' summary.

Grover, G., D. MacPherson, et al. (1996). The compatibility of biodiversity goals and commercial thinning. Proceedings of a commercial thinning workshop, Whitecourt, Alberta, p. 59-60.

Heath, L. S. and H. N. Chappell (1989). "Growth response to fertilization in young Douglas-fir stands." Western Journal of Applied Forestry 4(4) p. 116-119.

Response surface methodology was used to estimate 6-yr vol. growth response to 1 application of 200 lb N/acre in unthinned and thinned Douglas fir (Pseudotsuga menziesii) stands of b.h. age _25 yr in W. Washington and W. Oregon. Regional mean fertilizer response was 16% in unthinned stands and 20% in thinned stands. Site index had an increasingly inverse effect on response as b.a. increased in both unthinned and thinned stands. Response varied little over site index in regions of low b.a., decreased moderately as site index increased in the intermediate region, and decreased rapidly in the high b.a. region.

Knutson, D. and R. Tinnin (1986). "Effects of dwarf mistletoe on the response of young Douglas-fir to thinning." Canadian Journal of Forest Research 16(1) p. 30-35. Call Number: SD1.C35.

In 1973-74, study plots were established in 3 stands in Malheur National Forest, Oregon and in one stand in Okanogan National Forest, Washington. Douglas fir was the dominant tree species on all plots and many were infected with Arceuthobium douglasii. All plots had been precommercially thinned 1-10 yr earlier. Mensurational data were collected from 369 sample trees in 1973-74, 1980-81 and 1983. Mortality was <1% during the 10 yr of the study. Of all the infected trees studied, it was estimated that 19% had become sufficiently infected to cause significant reductions in diam. increment, representing 10% of all sample trees. Ht. increment was significantly reduced by infection in both forests, but diam. increment only in Malheur; 58% of infected trees showed b.a. increment equivalent to that of uninfected trees. Trees with light infections showed a significant increase in radial increment after thinning while more heavily infected trees did not.

Maguire, D. A. (1994). “Branch mortality and potential litterfall from Douglas-fir trees in stands of varying density.” Forest Ecology and Management 70(1-3) p. 41-53.

Differential crown recession and crown development among stands of differing density suggest that an opportunity may exist to control the input of fine woody litter into the system by manipulating stand density. The objective of this study was to measure the rate of branch mortality among stands of differing density and to estimate the range in total per hectare necromass inputs. Although litter traps are reliable for estimating per hectare rates of litterfall, branch mortality dating on sectioned stems uniquely allows assessment of several other litterfall components: (1) individual tree contributions to total litterfall; (2) the amount of branch material released by mortality, regardless of whether the branches are shed to the forest floor; (3) the distribution of basal diameters characterizing the litterfall from a given tree and stand. Twenty-four trees were felled and sectioned on permanent plots that were part of a silvicultural study of Douglas fir (Pseudotsuga menziesii) stand density regimes, in Umpqua National Forest, near Tiller, Oregon. Whorl branches were dissected out of bole sections to determine the dates of mortality, and a branch biomass equation was applied to estimate potential rate of litterfall. Periodic annual rates were expressed in four ways: (1) number of branches per tree; (2) mass of branches per tree; (3) mass of branches per unit of crown projection area; (4) mass of branches per hectare. For the growth periods investigated, larger trees and trees growing on denser plots tended to release a greater necromass through branch mortality. Average branch basal diameter generally decreased with increasing stand density. Annual branch mortality ranged from 33 to 430 g m-2 crown projection area for individual trees, and from 236 to 1035 kg ha-1 for individual plots. These rates approached the low end of the range of previously published fine litterfall rates for Douglas fir. Rates on these plots were relatively low owing to the temporary delay in crown recession imposed by artificial thinning. A conceptual model of branch litter dynamics is presented to depict consistencies with crown development among stands managed under different density regimes.

Main, M. L. and M. P. Amaranthus (1996). "Reducing stand densities in immature and mature stands, applegate watershed, southwest Oregon". Portland, OR. United States Department of Agriculture, Forest Service, Pacific Northwest Research Station. p. 11. Call Number: 634.9072.Un33f or SD11.A48.

McCreary, D. D. and D. A. Perry (1983). “Strip thinning and selective thinning in Douglas fir.” Journal of Forestry 81(6) p. 375-377. Call Number: 634.905 J.

In summer 1972, 35-yr-old stands in Oregon were strip thinned, selectively thinned at high or low intensity or left unthinned. The ratio of b.a. increment 5 yr after and 5 yr before treatment was calculated and found to be significantly larger for all thinning treatments than for controls. Selective thinning produced a significantly higher ratio than strip thinning. Trees more than 10 ft from the edges of thinned strips did not respond.

McNeel, J. F. (1997). Thinning operations - case studies of site impacts and production. Proceedings of a commercial thinning workshop, p. 81-85.

McNeel, J. F. and K. Dodd (1996). “A survey of commercial thinning practices in the coastal region of Washington state.” Forest-Products-Journal 46(11-12) p. 33-39.

Commercial thinning is being increasingly used as a source of wood fibre. Both public and private land managers have experienced this increase and anticipate that the trend will continue with the growth expected in cable-based commercial thinning. This paper reports the findings of a 1994 survey of forest land managers in the public and private sectors designed to determine how thinning operations changed between 1989 and 1994. In addition, surveys were sent to contract loggers who primarily work in thinning operations. Surveys were limited to operations and land managers located in Washington State, west of the Cascade Mountains. The results suggest that land managers anticipated substantial increases in the acreage being subjected to thinning. Increases had already occurred in harvest levels from those reported in 1989. Cable-based thinning was projected to increase at a greater rate than that for ground-based operations. Other findings suggest that the contractor was largely responsible for thinning layout and that land managers were particularly concerned about stand and site damage from these operations. The number of thinning contractors increased during the period studied, with a significantly greater number specializing in commercial cable-based operations. Many of the logging contractors, especially those performing cable-based commercial thinning, reported that they have extensive (>10 yr) experience in clearcut harvest

operations, but only limited experience in partial harvests. There are no defined industry standards for enforcing, regulating, or supervising commercial thinning operations. Many land managers enforce damage and distance rules loosely based on personal 'rules of thumb'. This has created substantial differences in the regulation of commercial thinning harvests between different land management agencies and even between different divisions of the same land holder.

Miller, R. E. (?). "Effects of fertilization on mortality in western hemlock and Douglas-fir stands". Institute of Forest Products, University of Washington. p. 253-265.

Thinned stands have been found to be more responsive than unthinned stands. Where responses do occur, optimum dosages would probably not exceed 200 pounds of nitrogen per acre.

Miller, R. E., G. W. Clendenen, et al. (1988). "Volume growth and response to thinning and fertilizing of Douglas-fir stands in southwestern Oregon". Pacific-Northwest-Research-Station, USDA-Forest-Service. p. 38. Call Number: SD11.A479.

Data were collected from 114 thinning (felling 15-80% of initial basal area) and/or fertilizer application (usually urea at 200 or 400 lb N/acre) trials in naturally regenerated Douglas fir (Pseudotsuga menziesii) stands in SW Oregon (111 stands) and N. California (3 stands). The data were used to develop regression equations to estimate volume growth for a 10-yr period of treated and untreated stands, aged 10-70 yr. The predictions for SW Oregon (SWOR) were compared with other growth predictions including DFSIM, a simulation model based on a broader, regional database. SWOR consistently showed greater gross and net growth of untreated Douglas fir and showed greater benefits of nitrogen fertilization, especially on poor quality sites and in young stands in the subregion than did DFSIM. SWOR predicted reduced gross volume growth during the 10 yr after thinning, faster recovery from early thinning on good than on poor sites, and increased wood production after nitrogen treatment in 70% of thinned and unthinned Douglas fir stands.

Miller, R. E., D. L. Reukema, et al. (1981). Response to fertilization in thinned and unthinned Douglas-fir stands. Proceedings, Forest Fertilization Conference, p. 150-157.

Growth data from thinning and fertilizing trials in 27 Douglas-fir stands in western Oregon, Washington, and British Columbia are summarized. These stands ranged from 15 to 68 years and from sites II to V. As expected, the initial effects of heavy thinning were to reduce gross growth per acre during the first 5 to 10 years after thinning. Fertilization with 150 to 600 pounds nitrogen per acre generally increased gross growth in both thinned and unthinned stands. The apparent gain in gross growth after fertilization was consistently greater in lightly to moderately thinned stands than in unthinned stands, however the T X F (thinning/fertilizing) interaction was seldom statistically significant. Thus far at these locations, fertilization increased site productivity and thinning concentratedproductivity onto selected crop trees.

Navratil, S. (1996). Wind damage in thinned stands. Proceedings of a commercial thinning workshop, Whitecourt, Alberta, p. 29-36.

Norris, L. A., P. R. Canutt, et al. (1983). “Arsenic in the forest environment after thinning with MSMA and cacodylic acid.” Bulletin of Environmental Contamination and Toxicology 30(3) p. 309-316.

The organic arsenic-containing herbicides, cacodylic acid (hydroxydimethylarsine oxide acid) and MSMA (monosodium methanearsenate), are used for precommercial thinning by stem injection in Pacific Northwest forests. Data are available on the distribution and persistence of MSMA and cacodylic acid in agricultural environments, but little attention has been given to the forest. Our study determined (1) the concentration of arsenic in forest floor, soil, and herbaceous and browse vegetation after injecting individual trees with MSMA and (2) the concentration of arsenic in streams flowing through forests operationally thinned with the arsenicals.

O'Hara, K. (1988). “Stand structure and growing space efficiency following thinning in an even-aged Douglas-fir stand.” Canadian Journal of Forest Research 18(7) p. 859-866. Call Number: SD1.C35.

The growth of individual trees from four thinning treatments in a 64-yr-old Pseudotsuga menziesii stand in western Washington was analysed to determine desirable residual stand structures after thinning. Dominant and codominant trees had the highest individual tree stem vol. growth rates over the previous 5 yr and accounted for most stand vol. growth in thinned and unthinned stands. Two measures of growing

space, crown projection area and sapwood b.a. (a surrogate for leaf area), were used to measure how efficiently individual trees used their growing space. Crown classes were useful in characterizing growing space efficiency (vol. growth per unit of growing space) only in the unthinned treatment. In thinned treatments, tall trees with medium-sized crowns were most efficient, while in the unthinned treatment tall trees with relatively large crowns were most efficient. A large crown in an unthinned stand was comparable in size to a medium-sized crown in a thinned stand. Results suggest growing space is not limiting individual tree growth in thinned stands and that thinning to a particular stand structure is more appropriate than thinning to a particular stand density.

O'Hara, K. L. (1990). "Twenty-eight years of thinning at several intensities in a high-site Douglas-fir stand in western Washington." Western Journal of Applied Forestry 5(2) p. 37-40.

Results are presented of a 28-year thinning study of a dense (182-452 tree/acre) natural, second growth Douglas fir (Pseudotsuga menziesii) stand at Delezenne, which compared 3 thinning treatments with an unthinned control. Treatments were: an increasing basal area treatment; a constant basal area treatment (of approximately 140 ft2/acre); a decreasing/increasing reserve basal area treatment; and control plots, which were 35 to 37-years-old with basal area 80-203 ft2/acre in 1957 when the tests were started. Gross, net, and total recoverable periodic cubic volume increments of the control treatment (10 396, 9108 and 16 092 ft3/acre, respectively) were not significantly different from the highest yielding treatment, which was the increasing reserve basal area thinning treatment (8896, 8594 and 16 636 ft3/acre, respectively). These results, and options for thinning schedules, are discussed; it is suggested that commercial thinnings of dense or fully stocked plantations of Douglas fir may produce similar results, that is, vigorous stands with rapid growth potential.

Peterson, C. E. and J. W. Hazard (1990). "Regional variation in growth response of coastal Douglas-fir to nitrogen fertilizer in the Pacific Northwest." Forest Science 36(3) p. 625-640. Call Number: SD1.F69.

Hypothesis-testing for differences in growth responses among physiographic strata, thinning levels, and fertilizer dosage levels resulted in a set of empirical models for predicting volume increment response of even-aged coastal Douglas-fir to nitrogen fertilizer. Absolute and percent responses are estimated for stands both thinned and unthinned, as a function of dosage levels and physiographic provinces. Although not "highly" significant, the physiographic factor was retained in the models for purposes of refinement.

Randall, R. M. (1977). "Financial consequences of commercial thinning regimes in young-growth Douglas-fir". USDA Forest Service, Pacific Northwest Forest and Range Experiment Station. p. 8. Call Number: 634.9072.Un33f or SD11.A48.

Data were generated from a computer program to compare the yields of Pseudotsuga menziesii from stands left unthinned, from thinned stands and from immediate harvesting. The data are tabulated by age at initial thinning, rotation age and site class. Gains from commercial thinning were slight or negative except when thinning is begun early and rotation age is long on site classes I to III. Financial returns are presented for 4% and 7% discount rates.

Reukema, D. L. (1972). "Twenty-one year development of Douglas Fir stands repeatedly thinned at varying intervals". USDA Forest Service, Pacific Northwest Forest and Range Experiment Station. p. 23. Call Number: SD11.A4849 or SD11.A485.

A further report after 21 years of a study already noticed [cf. FA 23, 5187] in which three frequencies of thinning (on a 3-, 6- or 9-year cycle) at the same intensity were established in 38-year-old stands of Pseudotsuga menziesii in W. Washington. Eighteen years after initial thinnings, the timber volume of the thinned stands (from which 65% of the initial volume had been removed) was almost the same as the initial volume before treatment and ca. 65% of the volume of unthinned stands. Thinning interval had no effect on net increment per acre over the 21-year period. Gross increment in all thinned stands was ca. 20% less than in comparable unthinned stands; however, mortality in thinned stands was only half that in the unthinned stands, and enough was salvaged to offset most of the growth loss. The primary benefit derived from these commercial thinnings was an earlier harvest of products, and not a substantial increase in total production per acre.

Reukema, D. L. (1975). "Guidelines for precommercial thinning of Douglas-Fir". USDA-Forest-Service-,-Pacific-Northwest-Forest-and-Range-Experiment-Station. p. 10. Call Number: SD11.A479.

Rosso, P. and E. Hansen (1998). "Tree vigour and the susceptibility of Douglas fir to Armillaria root disease." European Journal of Forest Pathology 28(1) p. 43-52.

The effects of thinning, fertilization and pruning on the vigour of Douglas fir (Pseudotsuga menziesii) and its susceptibility to Armillaria root disease were investigated in Oregon, USA. Tree vigour was defined as the relative capacity for tree growth, expressed as the above-ground biomass increment per unit of photosynthetic tissue, or growth efficiency (GE). It has been hypothesized that trees with higher GE can better resist pathogen attack, and that GE can be used as a predictor of tree susceptibility to disease. In a previous study, four P. menziesii plantations were thinned, fertilized and pruned in all combinations, and the effects of these treatments on tree vigour were measured after 10 years. Root disease was not a factor in the initial study design, and mortality was ignored until 8 years after the treatments were applied. The results of an earlier study were utilized and the correlation between Armillaria root disease incidence and the effects of earlier stand treatments on tree growth was investigated. A. ostoyae [A. obscura] was the primary cause of mortality in the study area. The disease incidence of infected subplots ranged from 2 to 20%. A. obscura incidence was the highest at medium tree density (6.1%), slightly lower on the low density (5.6%) and lowest on the unthinned plots (3.8%). There were no significant correlations between disease incidence and previous tree growth. The vigour of trees that became symptomatic or died by 1993 was not significantly different from the vigour of trees that remained asymptomatic in 1983-85. On these sites, in areas of infection, A. obscura was causing mortality of the largest, fastest growing trees, as well as less vigorous trees. It is concluded that Armillaria continues to cause mortality, regardless of the growth efficiency or growth rate of the host.

Sharrow, S. H., D. H. Carlson, et al. (1992). "Direct impacts of sheep upon Douglas-fir trees in two agrosilvopastoral systems." Agroforestry Systems 19(3) p. 223-232.

Livestock may provide important service and production functions in agroforestry systems. However, use of livestock in conifer/improved pasture agrosilvopastoral [silvopastoral] systems is currently limited by concerns about potential damage to trees by livestock. The effects of sheep grazing on Douglas fir (Pseudotsuga menziesii) trees in two patterns of sheep/pasture/conifer agroforest (cluster and grid plantations) at a site near Corvallis, Oregon, were studied from 4 yr after planting (1983) until the first precommercial thinning at 10 yr old (1988). The plantations had been established in 1979 using 2+0 Douglas fir seedlings planted as 5-tree clusters in 1.5 m diameter circles 7.7 m apart (840 trees/ha) and as a standard square grid of single trees 2.5 m apart (1600 trees/ha). In 1982, half of the plantations were rototilled and sown with inoculated Trifolium subterraneum. Trees averaged >1 m in height when grazing began in summer 1983. Some browsing of tree lateral branches by sheep occurred regardless of grazing season in 1983-85. However, the 2-10% of current year's lateral branch growth removed by grazing sheep was too low to affect tree growth. Sheep removed the terminal leaders from only 3-9% of trees each year during 1983-85. Most browsing of terminals occurred in the summer when other forages had become mature and were relatively unpalatable to sheep. Less than 13% of agroforest trees were barked by sheep each year during 1983-87. By the end of grazing in 1987, <8% of agroforest trees had sustained a level of barking likely to affect future growth (>50% of tree circumference barked). Mean forage utilization was greater in the cluster plantations, while browsing, barking and tree damage was greater in the grid plantations. Grazing had no discernible effect on tree diameter or height in any year ($P > 0.05$). Total tree mortality attributable to sheep grazing during 1983-87 was only 0.9%, including three trees girdled by sheep and two barked trees which were subsequently attacked by insects. Overall, grazing had no detrimental effect on timber stand growth or mortality.

Stegemoeller, K. A. and H. N. Chappell (1990). "Growth response of unthinned and thinned Douglas-fir stands to single and multiple applications of nitrogen." Canadian Journal of Forest Research 20(3) p. 343-349. Call Number: SD1.C35.

Basal area and volume growth response of unthinned and thinned Douglas fir (Pseudotsuga menziesii) stands to single and multiple applications of N fertilizer (as urea) were estimated for eight 2-yr periods in second-growth stands in Washington and Oregon. Response estimates, as differences between growth rates on fertilized and control plots after adjusting for initial volume (or basal area), and trends, were analysed on a regional scale. Average responses to the initial fertilization and to both the second and

third fertilizer applications, 8 and 12 yr later, were statistically significant ($P < 0.05$). In thinned stands, average duration of response to the initial treatment was approximately 8 yr; unthinned stands continued to show significant volume growth response through 14 yr although basal area growth response decreased to nonsignificant levels between years 10 and 12. In both cases, the response to refertilization, while significant, was smaller than the response to the initial fertilization. N applied after the 8th yr and a refertilization after the 12th, on one initially untreated plot at each site, also produced significant average growth responses.

Stegemoeller, K. A. and H. N. Chappell (1991). "Effects of fertilization and thinning on 8-year growth responses of second-growth Douglas fir stands." Canadian Journal of Forest Research 21(4) p. 516-521. Call Number: SD1.C35.

An evaluation is presented of a regional research project on basal area and volume increment responses to fertilizer (N) and fertilizer with thinning treatments of Pseudotsuga menziesii in W. Washington and Oregon for four 2-year measurement periods. Fertilization generally increased both basal area and volume growth for at least 8 years. Thinning tended to have an even greater effect than fertilization on basal area and volume growth on an individual-tree basis. Overall, however, the removal of growing stock by thinning caused volume growth to be less than that of the control. The magnitude and duration of this negative response was dependent on the level of thinning and on site quality. A significant positive interaction between fertilization and thinning exists. The combined treatment resulted in the greatest absolute basal area and volume increments, and the response became greater than that to fertilizer alone in the 3rd and 4th years, and remained so for at least 8 years.

Tappeiner, J. C., J. F. Bell, et al. (1982). "Response of young Douglas-fir to 16 years of intensive thinning". Forest Research Laboratory, Oregon State University. p. 17. Call Number: SD121.O74.

The report of the thinning study in the Oregon Coast Range includes a financial analysis of representative thinning regimes.

Telfer, E. (1997). Commercial thinning, biodiversity and forest birds. Proceedings of a commercial thinning workshop, Whitecourt, Alberta, p. 64-68.

Williamson, R. L. (1982). "Response to commercial thinning in a 110-yr-old Douglas-fir stand". Pacific Northwest Forest and Range Experiment Station, USDA Forest Service. p. 16. Call Number: SD11.A4849 or SD11.A485.

[See FA 28, 584] A stand in Washington was thinned in 1952 to 75 or 50% of normal b.a. After 19 yr the plots were remeasured and thinned again and stem analyses made for felled trees. Overall growth was similar in thinned and control plots, although mortality was 3-5X higher on control plots. The growth response relative to control trees was significantly greater for suppressed trees in the heavily thinned plots.

Witcosky, J. J., T. D. Schowalter, et al. (1986). "The influence of time of precommercial thinning on the colonization of Douglas-fir by three species of root-colonizing insects." Canadian Journal of Forest Research 16(4) p. 745-749. Call Number: SD1.C35.

Hylastes nigrinus, Pissodes fasciatus and Steremnius carinatus, vectors of black-stain root disease (Ceratocystis wageneri), were monitored during 1983-84 in two 12-yr-old Douglas fir plantations in S. Oregon that were unthinned or that were precommercially thinned in Sep. 1982, or Jan. or May 1983. The beetles were significantly more abundant on thinned than on unthinned plots. However, fewer H. nigrinus and P. fasciatus were caught on plots thinned in May than on plots thinned in Sep. or Jan. Results suggest that precommercial thinning should be avoided in areas of high risk to black-stain root disease or should be initiated in June or July following peak beetle flight in May.

Small Forest Management

(1991). "Woodland management plans". Fairbanks, Alaska. University of Alaska Coop Ext Serv. p. 4.

Baughman, M. J. and et al. (1993). "Woodland stewardship: A practical guide for midwestern landowners". University of Minnesota Extension Service. p. 195.

Blinn, C. R. a. H. T. E. (1986). Planning your timber sale. Woodland Owners and Users Conference, University of Minnesota, Office of Special Programs. p. 35-45.

Bliss, J. C. and W. A. Flick (1994). "With a saw and a truck: Alabama pulpwood producers." Forest and Conservation History 38(2) p. 79-89.

An account of the wood supply system for pulp mills which has developed since the 1930s and the characteristics of the people who work in the system.

Blyth, J. (1991). Farm woodland management. 2nd ed. Ipswich, U.K. (Alexandria Bay, NY, USA), Farming Press (Distributed in North America by Diamond Farm Enterprises). p. 196.

Bondi, M. and C. Landgren (1983). "The woodland workbook--management planning for woodland owners: why and how". Corvallis, OR. Oregon State Univ Ext Serv. p. 8.

Chavasse, C. G. R. (1985). "Forestry and the small grower: diversification in forestry." New Zealand Journal of Forestry 30(1) p. 28-44.

Christensen, H. C., S. Vehkamaki, et al. (1997). Sustainable management of small scale forestry: proceedings of IUFRO Symposium. Sustainable management of small scale forestry: proceedings of IUFRO Symposium, September 8-13, 1997, Kyoto, Japan, p. 281.

The conference was organized by IUFRO Groups 3.08.00 (Small Scale Forestry) and 6.11.02 (Forestry and Rural Development in Industrialized Countries), Kyoto University, the Japanese Forestry Society, the Japanese Forest Economic Society and the European Forest Institute, in cooperation with various other bodies. The proceedings contains a Panel discussion (Sustainable management of small scale forestry) with 3 papers, 28 oral presentations (papers) and 12 posters. The panel papers are: (1) Sustainable management of small-scale forestry: Recent development from the European perspective (Hyttinen, P.); (2) Change in public and private forest management: social and economic implications [in the US Pacific Northwest] (Christensen, H. C.; Raetting, T.); and (3) Management of private forests and sustainable forestry in Japan (Murashima, Y.). The oral papers are: (1) Effects of industrialisation of a society on the scale of forest management (Vehkamaki, S.) - with a case study from Estonia; (2) Management of private forests in Ireland (Dhubhain, A. N.; Wall, S.); (3) Measuring the private holding forestland use efficiency toward sustainability : an illustration of Nankang watershed in Taiwan (Lo ShawLin; Lo KaiAn); (4) Small-scale forestry and roles of forestry cooperatives in Kyushu (Hirata, K.); (5) A strategic planning model for a rural enterprise of agriculture, forestry and subsidiary business (Kajanus, M.; Kurttila, M.; Pesonen, M.); (6) Financial models for small scale farm forestry : an Australian case study involving mixed species plantations (Herbohn, J. L.; Harrison, S. R.; Emtage, N.); (7) An analysis of forest management practices in the Kamikita region [Japan] (Komaki, T.); (8) Development of small scale forestry and local wood manufacturing in Sweden: with special reference to a development program in the municipality of Orsa (Ager, B. H.; Bengtsson, S. P.); (9) Farm forestry in the Black Forest [Germany]: the role of the forest sector for the family income of farm holdings and the effect for regional employment (Brandl, H.); (10) Regenerating [recruiting] forestry workers in Japan (Ota, I.); (11) Cooperative marketing by forest owners of lumber for wooden houses [in Japan] (Sakanoue, N.); (12) Log export markets in rural new England, USA: implications for small scale private forestry (Howard, T. E.); (13) Puutori - electronic information exchange for timber trade in Finland (Pesonen, M. D.; Maatta, T.); (14) Evaluating economic effects of preserving biodiversity: a case study of Finnish private forestry (Torvelainen, J.); (15) The attitude of the state to small-scale private forest property [in Slovenia] (Winkler, I.; Krajcic, D.); (16) Seeing the forest and the trees: indirectly regulating private woodlots in Eastern Canada (MacNaughton, A.); (17) The nature of satoyama [the forests surrounding a village combined with traditional agriculture in Japan] and its sustainable utilization (Kitao, K.); (18) Hanase forest park [Kyoto, Japan] and rural community

development: a new trial for multiple use forestry (Mishima, Y.); (19) The level of interest and awareness in community forestry across the country of Canada and in the province of British Columbia (Mitchell-Banks, P.); (20) A reporting framework for publicly funded incentive schemes designed to encourage small-scale, multi-purpose private sector forestry: the case of the community rainforest reforestation program in Australia (Herbohn, K.; Herbohn, J.; Harrison, S.); (21) Close-to-nature management with private forests in Slovenia (Ilesic, P.; Tretjak, M.); (22) Policy for rural development forestry in the UK (Slee, B.; Miller, H.; Snowdon, P.; Edwards, S.); (23) The Obidowa village forest company Klikuszowa: a study of the Polish private forests economy (Gantner, A. G.; Glodkiewicz, A.); (24) The sawmill industry in forestry areas in Japan: a case study of Kumano (Taguchi, K.); (25) Forest owners' attitudes and estimates of non-market benefits of forestry: case study [in Finland] (Kallio, T.); (26) Contractual arrangements in silviculture: the case of Cana

Crowther, R. E. (1978). Managing small woodlands. Forestry Commission UK. p. 40.

A general publication providing basic information for the establishment and management of small woodlands (up to 10 ha, which occupy half of the 400 000 ha of UK woodland not under planned management), and including: objectives of woodland management (timber, landscape, conservation, sport and shelter); woodland types and treatment; choice of species; site preparation, establishment and maintenance; protection; and grant aid.

Cubbage, F. W. and T. G. Harris, Jr. (1986). "Tract size and forest management practices: issues, literature, and implications". Athens, Ga. Univ Ga Coll Agric Exp Stn. p. 29.

Curtin, T. W. (1983). "Woodland management". Urbana, Ill. Ill Agric Exp Stn. p. 8.

Dangerfield, C. W. J. a. G. J. E. (1990). "A forest management plan". Forestry on a budget. University of Georgia, Cooperative Extension Service. Bulletin no. 1032. p. 8-11.

Everett, B. D. (1989). Farm woodlands. Cumbrian woodlands - past, present and future. ITE-Symposium, p. 62-64.

Many farm woodlands in Cumbria, UK, are in a neglected state, and offer few benefits to the farmer. The benefits of good woodland management are described and include (for the farmer) shelter, game cover, farm timber and fuelwood production, and biological control of pests by the diversity of wildlife found in farm woodlands. There are also amenity and conservation benefits to the community. Reasons for the neglect of farm woodlands include the small scale of operations, the financial implications for the farmer, and lack of management knowledge. These problems could be partially solved by the formation of cooperatives to purchase forestry equipment, possibly linked to training schemes. Grant incentives for the establishment of farm woodlands are available as part of the encouragement of alternative use of agricultural land (because of excess production by the European Community). There are also labour schemes in cooperation with the Manpower Services Commision (MSC). New uses for farm forest products are discussed and include fuel production from energy forest, brushwood for livestock feed, and production of low-cost buildings. Silvopastoral systems are also possible.

Gregersen, H., V. P. Jarvelainen, et al. (1981). Congress Group 4.3: Economics at national and international level and forest policy. [Sessions 1-2]. Proceedings, XVII IUFRO World Congress: Plochmann, R. (Coordinator): Division 4: Planning, economics, growth and yield, management and policy, Kyoto, Japan, p. 578.

The 6 invited papers together with voluntary and poster papers presented at Session 1, The current state of Japanese forestry, do not appear in the main conference proceedings, but are published in full in a special volume noticed separately. Abstracts of 2 other posters presented in the Group are given on pp. 563-564. The 8 invited papers in Session 2, Effectiveness of forest policy measures as applied to small woodlands (none of which are published in the proceedings) were: Jarvelainen, V.P. Aspects of research strategy in studying forest owners' behaviour. Tikkanen, I. Effects of public forest policy in Finland. Madigan, G.; Jones, A.R.C. The private forest owners of Eastern Canada. Tanaka, S. Forest cooperatives as a policy measure for small woodlands. Brabander, H.D. Subsidies and efficiency in forestry co-operatives. Eid, J. Forest as a capital asset. Lonnstedt, L. The influence of Swedish forestry policy on the annual cuts of private woodlot owners. Tikkanen, I. Causality as a conceptual frame for forest policy analysis.

Gunter, J. E. c. (1987). "Georgia forest landowner's manual". University of Georgia, Cooperative Extension Service. Bulletin 950. p. 70.

Hill, D. B. (1993). "Small woodlot management in Kentucky". University of Kentucky, Cooperative Extension Service. p. 24.

Kittredge, D. B., Jr., M. J. Mauri, et al. (1996). "Decreasing woodlot size and the future of timber sales in Massachusetts: when is an operation too small." Northern Journal of Applied Forestry 13(2) p. 96-101. Call Number: SD1.N676.

The heavily forested landscape of Massachusetts is dominated by non industrial private ownerships. Statistics indicate that parcel size has decreased to a most recent average of 10.6 ac. Professional loggers were queried to determine if there was a timber sale size (expressed in either volume or area) below which they would not bid. Respondents indicated that they had operated on a timber sale as small as an average of 7.8 ac and 20.4 mbf, and would purchase one as small as an average of 5.3 ac and 17.1 mbf. The single most important factor in deciding to bid on a small sale was the quality and value of the timber. In the future, small parcels with a preponderance of low-quality timber resulting from high-grading may be deemed inoperable by loggers. The importance of high quality timber on small parcels emphasizes the need for stand improvement measures to ensure small parcels are feasible to commercially operate in the future.

Kreimes, M. L. (1995). "Forest stewardship planning workbook: an ecosystem approach to managing your forestland". Pullman. Washington State University Cooperative Extension. Pacific Northwest Cooperative Extension Publication. PNW490.

The workbook provides a format to organize, develop and record the elements of a forest stewardship plan for a particular property. Aspects covered in the workbook include: property description; forest owner values, goals, and objectives; forest health; home fire safety checklist; water, riparian zones, and fisheries habitat; soil resources; timber management; wildlife habitat and threatened and endangered species; forestland grazing; aesthetics and recreation; special forest products, forestland financial management; estate planning; and ten-year activity plan. A glossary of 36 terms is included.

Little, J. B. (1996). "To cut or not to cut: how to manage healthy forests." American Forests 103(i.e.102) p. 18-22, 31. Call Number: 634.905 AM.

Marty, T. D. (1989). "Agroforestry". Urbana, Ill. Illinois Agric Exp Stn. p. 27.

Mayhead, G. J. (1996). "Management plans for smaller woods." Quarterly Journal of Forestry 90(4) p. 313-318.

The traditional forest working plan is unsuitable for small private (farm or other) woodlands (50-100 ha) in the UK. A much smaller woodland management plan of 3-35 pages is more appropriate. The contents of such a woodland management plan are discussed, with the student, new owner and professionalism in mind. It is emphasized that a woodland management plan should not be confused with a grant application.

McKight, G. M. (1996). "Controlled grazing in woodlands: benefits for conservation and farmers." Agroforestry Forum 7(3) p. 10-13.

Farm woodlands constitute a significant proportion of relic native woodlands within the Scottish Highlands. They provide farmers with extensive grazing and valuable shelter, including outwintering, for livestock. Increasing recognition is being given to the value of semi-natural birchwoods on farmland in the Highlands and in the Cairngorm Straths Environmentally Sensitive Area in particular. This has led to management developments within the existing woodland management and conservation grant schemes which are of particular relevance to tenant farmers.

Morgan, N. R. (1989). "Community and urban forestry in Washington and Oregon." Journal of Arboriculture 15(6) p. 135-140. Call Number: SB435.J68.

Page, T. (?). "Small Scale Forestry for the Rural Landowner: a Guide to the Benefits Provided by Forests". Unpublished draft by author. On file? Y.

Randall, R. M. (1976). Commercial thinning as an income opportunity for small woodland owners. Managing young forest in the Douglas-fir region Vol. 5, Proceedings, p. 115-127.

For owners of small woodlands, the relative significance of financial and nonfinancial objectives, and the financial situation of the owner, may have greater importance than the condition of the timber in management decisions. These considerations can encourage owners to fell immature stock or to retain overmature trees.

Verner, M. (1994). “Connecticut's two-pocket woodland.” American Forests 100(1/2) p. 42-45. Call Number: 634.905 AM.

Wrigley, P. I. (1951). "Woodland as a farm enterprise". Pennsylvania State College. Agricultural Experiment Station. p. 36.

Zehetmayr, J. W. L. (1985). "The Gwent small woods project 1979-84". Forestry Commission, UK. p. 48.

The project was sponsored by the Countryside Commission and the Forestry Commission. Its objectives were to investigate the extent to which effective woodland management on farms can be achieved for landscape, nature conservation, and wood production benefits, consistent with good agricultural practice. Important features of the project included: sale of timber, planting, restocking, fencing against stock, natural regeneration, coppicing and irregular forestry.

Social Science

Alig, R., Karen Lee and Robert Moulton "Likelihood of Timber Management on Nonindustrial Private Forests: Evidence from Research Studies". USDA Forest Service. Southeastern Forest Experiment Station. Call Number: SD11.S68a. On file? Y.

Argow, K. A. (1989). You can lead woodland owners to water, but you can't make them drink. Proc-Soc-Am-For-Natl-Conv., Bethesda, Md., p. 279-281.

Argow, K. A. (1990). The 1990's NIPF decade: the magic and the myth: introductory comments and background. Proceedings of the Society of American Foresters National Convention, Bethesda, Md., p. 489-490. Call Number: 634.906 SOP.

Argow, K. A. (1994). Private landowners rights. Proceedings of the Society of American Foresters National Convention, Bethesda, MD., p. 411-414. Call Number: 634.905 SOP.

Argow, K. A. (1994). "Stewardship begins at home: the private property responsibility initiative." Journal of Forestry 92(5) p. 14-17. Call Number: 634.905 J.

Argow, K. A. (1996). "This land is their land: the potential and diversity of nonindustrial private forests." Journal of Forestry 94(2) p. 30-33. Call Number: 634.905 J.

Bergmeier, R. (1986). "Non-industrial private forest lands. Part II - Non-industrial private forest owner attitudes". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(4). p. 4-7.

Binkley, C. S. (1981). "Timber supply from private nonindustrial forests. A microeconomic analysis of landowner behaviour". Yale University School of Forestry and Environmental Studies. Bulletin No. 92. p. 97.

A report in 6 chapters. After an introduction, the problem of timber supply from private nonindustrial owners is reviewed. The usual assumptions about future scarcity of timber and poor management of private forests are neither supported nor rejected by the data. Symptoms of timber scarcity are better explained by a simple model of optimal reduction of old growth inventory. Chapter 3 develops a formal economic model of landowner behaviour characterizing the forest both as a productive enterprise and as a direct utility (recreation and other amenity values) and gives some theoretical results. In chapter 4 the statistical method used to estimate the timber supply model is described and data is presented from a sample of New Hampshire landowners [see FA 40, 3448]. Chapter 5 further examines the model using detailed data on timber management from 50 individuals in New Hampshire (the Pilot Woodland Management Program Cooperators) and chapter 6 summarizes conclusions. The probability of timber harvest is strongly affected by stumpage prices. Farmers, owners of large areas and less affluent owners are more likely to harvest, and are more responsive to price. The data used in the study are given in 3 appendices.

Birch, T. W. (1983). "The forest-land owners of New York". USDA Forest Service Northeastern Forest Experiment Station. Resource Bulletin No. NE-78. p. 80. Call Number: SD11.A47562.

Estimates are given of the number, attitudes and objectives of private forest land owners in the state.

Birch, T. W. (1983). Private forestland owners in the United States: their number and characteristics. Nonindustrial private forests : a review of economic and policy studies : symposium proceedings, Durham, N.C., School of Forestry and Environmental Studies, Duke University. p. 71-75.

Birch, T. W. (1984). The private forest land owners of the United States. New forests for a changing world : proceedings of the 1983 Convention of the Society of American Foresters, Portland, Oregon, p. 626-630.

Birch, T. W. (1986). "Forest-land owners of Maine, 1982". USDA Forest Service No Station. Resource Bulletin No. NE-90. p. 83.

Information is given on the attitudes and objectives of private forest land owners.

Birch, T. W. (1989). "Forest-land owners of New Hampshire, 1983". USDA Forest Service: Northeastern Forest Experiment Station. Resource Bulletin No. NE-108. p. 96. Call Number: SD11.A47562.

Analysis of 367 responses to a mail survey showed that 86% of timberland is privately owned in New Hampshire and that 86% of these are individual and joint ownerships. Tables show forest-land owner characteristics, attitudes and intentions regarding reasons for owning, recreational use, timber management and timber harvesting.

Birch, T. W. (1992). Land ownership and harvesting trends in eastern forests. Proc-Annu-Hardwood-Symp-Hardwood-Res-Counc, Memphis, Tenn., p. 143-157.

Birch, T. W. (1996). "Private forest-land owners of the northern United States, 1994". USDA Forest Service Northeastern Forest Experiment Station. Resource Bulletin No. NE-136. p. 293. Call Number: SD11.A47562.

Information from a recent study of forest-land owners has provided a new estimate of the number of ownerships and insight into the attitudes and actions of this important group of decision makers. Nearly 25% of the private forest land is in ownerships of more than 500 acres. Nearly half of these owners have harvested timber from their holdings at some time in the past. Owners have a positive attitude toward timber cutting at a time when there is greater demand for products from the forest. Interest in harvesting the timber resource has created a situation in which watchful monitoring and good stewardship are be needed to maintain the productivity of ecosystems for future generations.

Birch, T. W. and D. F. Dennis (1982). "The forest-land owners of Pennsylvania". USDA Forest Service Northeastern Forest Experiment Station. Resource Bulletin No. NE-66. p. 90. Call Number: SD11.A47562.

Birch, T. W., D. A. Gansner, et al. (1992). “Cutting activity on West Virginia timberlands.” Northern Journal of Applied Forestry 9(4) p. 146-148. Call Number: SD1.N676.

A recently completed forest inventory and woodland owner survey have given us insight into contemporary cutting activities in West Virginia. About one-third of the private woodland owners have harvested timber from their holdings at some time in the past and they control two-thirds of the private timberland. Although timber harvesting has increased in recent years, it remains a concentrated activity. Remeasured plot data show that only 24% of the timberland had cutting disturbance between the last two inventories. Four-fifths of the cutting took place on one-tenth of the timberland. The timber resource is ripe for more cutting, landowner attitudes have changed to favor increased harvesting, and recent government initiatives support a climate for timber development. There is no denying that physical supplies of timber and landowner intentions reveal a potential opportunity for significant expansion in wood use.

Blatner, K. A., D. M. Baumgartner, et al. (1991). “NIPF use of landowner assistance and education programs in Washington State.” Western Journal of Applied Forestry 6(4) p. 90-94.

A questionnaire survey (910 responses) of non-industrial private forest landowners indicated that 47% of them had received some form of education or similar assistance (e.g. university courses, extension programmes, private forestry consultants) for forest management.

Blatner, K. A. and J. L. Greene (1989). “Woodland owner attitudes toward timber production and management.” Resource Management and Optimization 6(3) p. 205-223.

Two hundred non-industrial woodland owners in Arkansas, USA, grouped according to timber management and sale behaviour, were asked to evaluate 8 statements (in 28 pairs) representing a range of attitudes. Although only timber managers and sellers consistently held financial objectives for their woodlands, all groups showed moderate or strong interest in non-market forest uses (e.g. wildlife and recreation) and in holding timber as a cash reserve.

Bliss, J. C., Ed. (1989). nipf!: Selected Writings on Nonindustrial Private Forests. Madison, WI, Department of Forestry, University of Wisconsin, Madison. Call Number: SD387 W7 B55 1989.

Bliss, J. C. (1992). "Evidence of ethnicity: management styles of forest owners in Wisconsin." Forest Conservation History 36(2) p. 63-72.

Bliss, J. C. (1992). "Survey yields insight into Alabama forest owner's attitudes". Auburn University, Ala. Ala Agric Exp Stn. p. 3.

Bliss, J. C. (1993). "Alabama's nonindustrial private forest owners: snapshots from a family album". Auburn, Ala. Alabama Cooperative Extension Service, Auburn University. p. 20.

Bliss, J. C. (1993). "Public opinions--private forests". Auburn, AL. Agricultural Experiment Station of Auburn University. p. 5.

Bliss, J. C. (1996). The small forester problem. Society of American Foresters Convention, Call Number: 634.905 J.

Bliss, J. C., R. T. Brooks, Jr., et al. (1993). Attitudes in the Tennessee Valley region toward forest practices and policies. Proc Hardwood Symp Hardwood Res Counc, Memphis, Tenn., p. 117-127.

Bliss, J. C. and A. J. Martin (1988). "Identity and private forest management." Society and Natural Resources 1(4) p. 365-376.

Nonindustrial private forests (NIPF) comprise 60% of commercial forest land in the USA and contribute significantly to the country's demand for timber, recreational opportunities, and other forest-related products and amenities. Despite numerous NIPF owner surveys, ownership and management motivations remain poorly understood, thus hampering design of effective NIPF policy and programmes. In this study, a qualitative approach was taken to ascertain management motivations of NIPF owner-managers. Informants were selected who demonstrated a history of active forest management for multiple purposes in accordance with mainstream professional forestry standards. The authors conclude that forest ownership and management contribute to, and are influenced by, owner identity. Topics discussed include relationships between forest management and personal, social, and ethnic identity; the importance of family considerations to forest ownership and management; the recreational value of management activities; the role of management as an attractive challenge; and the effect of management on owners' perceptions of resource control.

Bliss, J. C. and A. J. Martin (1988). Motivations of nonindustrial private forest managers: a qualitative approach. Proceedings: Society of American Foresters National Convention, Bethesda, Md, p. 349-353.

Bliss, J. C. and A. J. Martin (1989). "Identifying NIPF management motivations with qualitative methods." Forest Science 35(2) p. 601-622. Call Number: SD1.F69.

Most studies of nonindustrial private forest (NIPF) owners are constrained by the intrinsic limitations of survey research. This paper contrasts survey methodology with qualitative methodology, demonstrates the utility of the latter with an example from research on management motivations of NIPF managers in Wisconsin, and suggests ways in which the two methodologies can complement each other in future NIPF research. Sixteen case studies of Wisconsin NIPF managers were developed from transcribed tape recordings of unstructured interviews, management records, and field examinations. Cases were compared and analyzed for recurring motivations, attitudes, and values. The authors discuss how forest ownership and management contribute to owner identity, and the influence of ethnic, family, and personal identity on management activites.

Bliss, J. C., S. K. Nepal, et al. (1994). "Forestry community or granfalloon? Do forest owners share the public's views." Journal of Forestry 92(9) p. 6-10. Call Number: 634.905 J.

Bliss, J. C., S. K. Nepal, et al. (1997). "In the mainstream: environmental attitudes of mid-south forest owners." Southern Journal of Applied Forestry 21(1) p. 37-43. Call Number: SD1.S693.

A 1992 telephone survey of households in seven mid-South states provided data for comparing the opinions of NIPF owners with those of the general public. Topics explored included traditional forest management practices, governmental regulation of tree cutting to protect environmental values, and trade-offs between environmental protection, private property rights, and economic development. In each of these areas the views of NIPF owners were found not to differ significantly from those of the general public. A widespread desire for environmental protection tempers views toward forest practices, forest-based economic development, and private property rights. The relationships between NIPF owners' demographic characteristics, ownership activities, and opinions were explored. Study results challenged common assumptions about NIPF owners, questioned the effectiveness of existing forestry education efforts, and argue for a stronger, more explicitly environmental orientation in all forestry activities.

Bourke, L. and A. E. Luloff (1994). "Attitudes toward the management of nonindustrial private forest land." Society and Natural Resources 7(5) p. 445-457.

Management of US forests has been widely criticized. Such criticisms stem, in part, from the widely held belief that owners and managers of nonindustrial private forests (NIPFs) have a vested economic interest in the resource not shared by the general public. As a result, previous studies of NIPF management have assumed that landowners differ from the general public and hold utilitarian-orientated values toward the natural environment. Data collected in Pennsylvania, a state with one of the largest acreages of NIPFs, challenge this commonly held belief. This article presents evidence of common concerns held by NIPF landowners and the general public with respect to their attitudes toward forests and forest management polices. Moreover, these findings reveal that sociodemographic characteristics, use of the forest, and ownership status have little influence on attitudes toward management.

Boyd, R. (1983). The effects of FIP and forestry assistance on nonindustrial private forests. Nonindustrial Private Forests: a review of economic and policy studies, Durham, N.C., School of Forestry and Environmental Studies, Duke University. p. 189-203. Call Number: SD387.W6 N66 1983. On file? N.

Broderick, S. H., K. P. Hadden, et al. (1994). "The next generation's forest: woodland owners' attitudes toward estate planning and land preservation in Connecticut." Northern Journal of Applied Forestry 11(2) p. 47-52. Call Number: SD!.N676.

Describes extension activities at the University of Connecticut, and reports results of a questionnaire survey to non-industrial private forest (NIPF) owners.

Carpenter, E. M. (1985). "Ownership change and timber supply on nonindustrial private land". St. Paul, Minn. USDA Forest Service North Cent For Exp Stn. Research Paper 265. p. 14. Call Number: SD11.A47. On file? Y.

Results of earlier surveys in 1960 and 1967, and a new survey in 1979 of the same properties in Michigan's Upper Peninsula were studied to determine the way in which the land base had been divided and augmented and the reactions of private owners to timber harvesting opportunities.

Carpenter, E. M. and M. H. Hansen (1985). "The private forest landowners of Michigan". USDA Forest Serice North Central Forest Experiment Station. Resource Bulletin NC-93. p. 55. Call Number: SD11.A472.

An account is given of the number and distribution of non-industrial private forest landowners by size class and of the owner attitudes and objectives concerning ownership, management and use of forests.

Carpenter, E. M., M. H. Hansen, et al. (1986). "The private forest landowners of Minnesota - 1982". USDA Forest Service North Central Forest Experiment Station. Resource Bulletin NC-95. p. 55. Call Number: SD11.A472.

Results are given of a survey to determine owners' attitudes and intentions concerning ownership, management, harvesting and recreational use of their forest property.

Chuanzhong, L. (1990). "A behaviour model of non-industrial private forest owners and the effect on timber supply." Arbetsrapport Institutionen for Skogsekonomi, Sveriges Lantbruksuniversitet 108 p. 16.

The timber supply behaviour of nonindustrial private forest (NIPF) owners was studied. An intertemporal production model was presented and, through this, the properties of the optimal harvest

problem were analysed and the effects of exogenous income, forest size, timber price, uncertainty in timber price and amenity valuation were examined. In the presence of amenity valuation, the price elasticity of timber supply was always smaller compared to the pure production case. Timber harvest increased with increasing forest size, provided that income was unrelated to forest size. When the amenity value of the forest was considered, the owner's response to future price uncertainty depended on the response of neighbouring forest owners.

Clair, O. A. a. S. B. J. (1988). "Private, non-industrial forest landowners' views on thinning". American Pulpwood Association. [Technical Paper] 88-P-3. p. 5.

Clark, B., Theodore Howard and Richard Parker (1992). "Professional Forestry Assistance in New Hampshire Timber Sales." Northern Journal of Applied Forestry Sept, '92 . Call Number: SD1.N676. On file? Y.

Cleaves, D. A. and M. Bennett (1995). "Timber harvesting by nonindustrial private forest landowners in western Oregon." Western Journal of Applied Forestry 10(2) p. 66-71.

A survey of nonindustrial private forest (NIPF) landowners in western Oregon was analysed to gain insights into their harvesting activity. Past participation in harvesting, harvest type, and future intentions for harvest were related to ownership size, tenure, residence, form of organization, method of acquisition, occupation, age and income. Some 30% of respondents reported harvesting at least once during 1979-89. Higher rates of harvest participation were found for larger ownership sizes, longer tenure, corporate organization, farm ownership, and higher personal income. At least some of the influence of size on reported participation came from the natural tendency of larger ownerships to have a greater variety of acres eligible for harvest. Ownership size combined with a variety of demographic factors (tenure, residence, form of organization, aquisition method, occupation, and income) influenced whether the harvest was a clearcut or a commercial thinning. Commercial thinning and thinning/clearcutting combination harvests were more common than clearcutting. Landowners were generally willing to harvest in the future; more than two-thirds of the NIPF acreage is controlled by owners with definite harvest plans. Owners who reported no intentions to harvest had little past harvesting activity. The predominance of thinning and other forms of partial cutting by smaller NIPF owners may indicate opportunities to improve the condition of NIPFs through assistance in selective cutting.

Cleaves, D. a. M. B. (1995). "Timber Harvesting by Nonindustrial Private Forest Landowners in Western Washington." Western Journal of Applied Forestry 10(2) . On file? Y.

Craig, G. (1994). "Forest Health on Nonindustrial Private Lands: Meeting Owners' Needs and Wants." Journal of Forestry . Call Number: 634.905 J. On file? Y.

Cubbage, F. W. and W. C. Siegel (1988). "State and local regulation of private forestry in the East." Northern Journal of Applied Forestry 5(2) p. 103-108. Call Number: SD1.N676.

Cubbage, F. W. and D. N. Wear (1994). Can nonindustrial private forest landowners make up the shortfall in timber production from national forests. Proc Soc Am For Natl Conv., Bethesda, MD., p. 421-426. Call Number: 634.906 SOP.

Dennis, D. F. (1989). "An economic analysis of harvest behavior: integrating forest and ownership characteristics." Forest Science 35(4) p. 1088-1104.

This study provides insight into the determinants of timber supply from private forests through development of both theoretical and empirical models of harvest behavior. A microeconomic model encompasses the multiple objective nature of private ownership by examining the harvest decision for landowners who derive utility from forest amenities and from income used for the consumption of other goods. Tobit analysis is used to estimate the relationship between harvest behavior and forest, owner, and economic characteristics from cross-sectional data for individual forest plots in New Hampshire. The empirical results highlight the influence of forest characteristics and landowner affluence on the harvest decision. Decomposition of the Tobit coefficients indicates that changes in timber supply are expected to result primarily from changes in the number of acres from which timber is offered for sale and to a much

lesser extent from changes in per-acre harvesting intensity. Marginal supply responses varied considerably depending on the values for the other coefficients and variables, underscoring the need to consider the shape of the distribution as well as the mean values for the explanatory variables when projecting harvest behavior.

Dennis, D. F. (1990). "Factors influencing recreational use of private woodland". Radnor, PA. U S Dep Agric For Serv Northeast For Exp Stn. p. 3. Call Number: SD11.A475.

Dennis, D. F. (1990). "A probit analysis of the harvest decision using pooled time-series and cross-sectional data." Journal of Environmental and Economic Management 18(2,pt.1) p. 176-187. Call Number: SD1.F69.

Dennis, D. F. (1993). "An empirical study of posting private nonindustrial forests." Wildlife Society Bulletin 21(1) p. 6-10.

Dennis, D. F. and P. E. Sendak (1992). "An empirical study of enrollment in Vermont's Use Value Appraisal property tax program." Canadian Journal of Forest Research 22(9) p. 1209-1214. Call Number: SD1.C35.

A probit model was used to analyze the relationship between the probability of enrollment in Vermont's Use Value Appraisal property tax program for forest land and characteristics of the parcel, owner, and surrounding community. The results suggest that continued fragmentation of the forest and population growth will have a negative effect on enrollment, but these effects may be mitigated by increases in the education level of landowners and by increases in assessed values and property tax rates.

Doolittle, L. a. S. T. J. (1989). "Regeneration following harvest on nonindustrial private pine sites in the South: A diffusion of innovations perspective". nipf! Selected writings on nonindustrial private forests. J. C. Bliss. University of Wisconsin-Madison, Dept. of Forestry. p. 10.

Egan, A. and S. Jones (1993). "Do landowner practices reflect beliefs? Implications of an extension-research partnership." Journal of Forestry 91(10) p. 39-43, 45. Call Number: 634.905 J.

Egan, A. F. (1996). Harvesting nonindustrial private forests: Who's in Charge? Symposium on Non-industrial Private Forests: Learning from the past, Prospects for the Future, Washington, DC, University of Minnesota, Extension Special Programs. p. 276-284.

Egan, A. F. (1996). Some Central Appalachian dis-chords: are NIPF owners in tune with themselves and the red suspenders crowd. Proc-Soc-Am-For-Natl-Conv., Bethesda, MD, p. 17-22. Call Number: 634.906 SOP.

Egan, A. F., Jones S. B., Luloff A. E., and J. C. Finley (1995). "The value of using multiple methods: An illustration using survey, focus group, and delphi techniques." Society and Natural Resources 8(5) p. 457-465.

English, B. C., C. D. Bell, et al. (1997). "Stewardship incentives in forestry: participation factors in Tennessee." Southern Journal of Applied Forestry 21(1) p. 5-10. Call Number: SD1.S693. On file? Y.

The likely effect of cost-share incentives on participation in Tennessee's Forest Stewardship Programme (which encourages planting of new trees) was estimated and contributing factors were identified. Surveys were mailed to 4000 nonindustrial private forest (NIPF) landowners, and a logit model was developed to examine economic, physical and behavioural factors which affect the landowner participation decision. Data collected indicate that the majority of landowners are concerned with water quality and wildlife habitat in addition to timber enhancements. Model results indicate that attitudes, experience, and knowledge of forestry programmes may outweigh monetary incentives (50, 65 and 75% cost share) in the participation decision.

Force, J. E., H. W. Lee, et al. (1988). NIPF landowners in northern Idaho. Proc Soc Am For Natl Conv., Bethesda, Md., p. 343-348.

Force, J. E. a. L. H. W. (1987). "NIPF landowner survey for northern Idaho: A survey of landowner objectives. Summary report". University of Idaho, College of Forestry, Wildlife and Range Sciences.

Force, J. E. a. L. H. W. (1989). "NIPF landowner survey for southern Idaho: A survey of landowner objectives. Summary report". University of Idaho, College of Forestry, Wildlife and Range Sciences. p. 41.

Force, J. E. a. L. H. W. (1991). "Nonindustrial private forest owners in Idaho." Western Journal of Applied Forestry 6(2) p. 32-36.

Greene, J. L. and K. A. Blatner (1986). "Identifying woodland owner characteristics associated with timber management." Forest Science 32(1) p. 135-146. Call Number: SD1.F69.

Hara, T. and A. S. Reed (1991). "Timber market development from private forests in northwestern Minnesota." Northern Journal of Applied Forestry 8(4) p. 153-155. Call Number: SD1.N676.

Data from a mail questionnaire survey of 617 non-industrial private forest landowners (NIPF) are presented, in the context of an expanding demand for timber in the state; information is included on marketing experiences, forest management objectives, harvest plans, timber marketing barriers, use of forestry advice and preferred educational assistance.

Hardesty, L. H., J. H. Lawrence, et al. (1993). "Private forest landowner's perceptions of forest grazing in Washington state." Journal of Range Management 46(1) p. 49-55. On file? Y.

Nonindustrial private forest landowners (NIPF) control 21.4% of Washington's commercial forestland, much of which produces forage. Resident NIPF owners in 3 regions in the state were surveyed to determine their perceptions of forest grazing. Thirty-nine percent of the respondents grazed livestock on forestland they leased or owned, and grazing was perceived by practitioners to contribute significantly to household income. Nonincome-related motivations for owning and managing land were also significant: passing land on to children, keeping it 'natural', conservation, aesthetics, and as a current or future homesite. In western Washington, some forest grazing occurred year round while in eastern Washington it was all seasonal. Cow/calf pairs were the most commonly grazed livestock. The median size forestland parcel owned by forest grazers was 47 ha versus 24 ha for nongrazers. Leasing additional land increased the likelihood of forest grazing. Significant opportunities exist to improve both the condition and productivity of forested ranges. Achieving this requires a clear understanding of landowner's objectives and beliefs. Data are needed to evaluate landowner's perceptions that forest grazing has both economic and amenity benefits.

Hardie, I. W. and P. J. Parks (1991). "Individual choice and regional acreage response to cost-sharing in the south, 1971-1981." Forest Science 37(1) p. 175-190. Call Number: SD1.F69.

Total acreage responding to a given economic incentive is a key measure of the effectiveness of many government forest land-use programs. Examples are the FIP and America the Beautiful programs. Acreage response depends both on landowner behavior and on land characteristics. Prediction of this response for new or untried government incentives consequently requires simultaneous estimation of landowner land-use decisions and of the number of acres affected by the decisions. A method to predict aggregate acreage response to proposed land-use programs is described in the paper. This method is illustrated by an analysis of how cost-sharing could have affected NIPF owner investment in pine regeneration on harvested lands in the South in 1971-1981. Results show that cost-sharing may have encouraged 70% of the regeneration investment observed during the period, and that changes in the cost-share incentive would have been an effective way to change the amount of pine acreage planted or seeded in the South during this period. Application of the method to proposed future programs would require a new area frame sample survey.

Haymond, J. L. (1988). "NIPF opinion leaders: what do they want." Journal of Forestry 86(4) p. 30-31, 34-35. Call Number: 634.905 J.

Haymond, J. L. and S. B. Baldwin (1988). "Methods and materials for studying early adopters who own nonindustrial private forestland". Department of Forestry, Clemson University. p. 26.

A study was made of 64 innovative nonindustrial private forest (NIPF) owners in eight rural counties in South Carolina. The methods and questionnaire used (but not the results) are presented.

Henry, W. A. and J. C. Bliss (1994). "Timber harvesting, regeneration, and best management practices among west central Alabama NIPF owners." Southern Journal of Applied Forestry 18(3) p. 116-121.

Data are presented on non-industrial private forest (NIPF) owners knowledge and implementation of timber harvesting, regeneration and best management practices (BMP). Satellite imagery was used to locate recent clear-felled tracts on NIPF land in west-central Alabama. Forest regeneration, waterway protection and other measures of site condition were determined by field inspection. Results of a mail questionnaire survey were compared with the field inspection findings. These showed that NIPF owners who were satisfied with post-harvest conditions in their forests were inclined to regenerate harvested stands and plan future harvests. Most owners appeared to be knowledgeable about the regeneration status of their forests and have taken steps to achieve regeneration. By contrast, few owners recognized the need for BMP to protect waterways, and fewer had implemented adequate BMP.

Henry, W. A. a. B. J. C. (1992). Effect of NIPF harvesting satisfaction on regeneration and harvest decisions. Proceedings of the 1992 Southern Forest Economics Workshop on the Economics of Southern Forest Productivity: Competing in World Markets, Mobile, AL, p. 269-280.

Hickman, C. A. (1983). Changing attitudes toward timber marketing from NIPF lands in East Texas. Nonindustrial private forests : a review of economic and policy studies : symposium proceedings, Durham, N.C. : School of Forestry and Environmental Studies, Duke University,, p. 311-317.

Hoover, W. L. (1996). NIPF studies: where are we on the learning curve. Proc-Soc-Am-For-Natl-Conv, Bethesda, MD., p. 23-27. Call Number: 634.906 SOP.

Hyberg, B. T. and D. M. Holthausen (1989). "The behavior of nonindustrial private forest landowners." Canadian Journal of Forest Research 19(8) p. 1014-1023. Call Number: SD1.C35.

Recent models of nonindustrial private forest (NIPF) landowner behaviour (eventually reflected in overall management plans) have suggested that landowners seek non-monetary as well as monetary returns from their forest investments. In this paper, landowners are modelled as maximizing utility, which is a function of income and non-monetary benefits. Major implications of the model are that utility-maximizing NIPF landowners will invest a larger amount of capital in reforestation and grow their timber using longer rotations than would profit-maximizing landowners. Empirical evidence from Georgia, USA, supporting the model is presented. Some policy implications are discussed.

Jamnick, M. S. and D. R. Beckett (1988). "A logit analysis of private woodlot owner's harvesting decisions in New Brunswick." Canadian Journal of Forest Research 18(3) p. 330-336. Call Number: SD1.C35. On file? Y.

Johnson, R. L., R. J. Alig, et al. (1997). "NIPF landowners' view of regulation." Journal of Forestry 95(1) p. 23-28. Call Number: 634.905 J.

Jones, M. A. and D. R. Self (1991). "Recreational incentives in the adoption of a forest land management program by non-industrial private landowners: marketing the Treasure Forest Program in Alabama". Asheville, N.C. U S Dep Agric Forest Service, Southeast For Exp Stn. p. 123-130. Call Number: SD11.S68a. On file? Y.

Jones, S. B. (1994). Who are these NIPF owners and what do they know about silviculture? Proc Hardwood Symp Hardwood Res Counc, Memphis, TN, p. 37-52.

Jones, S. B., A. E. Luloff, et al. (1995). "Another look at NIPFs: facing our 'myths'." Journal of Forestry 93(9) p. 41-44. Call Number: 634.905 J.

Most non-industrial private forests (NIPFs) in the USA are not well managed, but many foresters have personal biases in their perceptions of private forest owners and do not truly understand them. This article discusses whether the forestry community can reject historical mythical perceptions and empower NIPF owners to practice forest stewardship. Data from Pennsylvania are used to characterize NIPF owners with respect to their connection with rural land, environmental activities, management for timber production, and attitude to property rights.

Kelso, W. H., Jr. (1983). "Nonindustrial private forest landowners: a close-up look at Spokane County, Washington." Forestry Abstracts 44(10) p. 626-627.

Kurtz, W. B., Marty T. D. and Trokey C. B. (1984). Motivating the nonindustrial private forest landowner. New forests for a changing world. Proceedings, 1983 convention, Society of American Foresters, p. 635-637.

Kurtz, W. B. a. M. L. (1976). "The Small Forest Landowner: ownership and characteristics". p. 13. Call Number: Suzzalo Z5942.C68 no.1110-1120. On file? N.

Larsen, D. N. and D. A. Gansner (1972). "Pennsylvania's private woodland owners: a study of the characteristics, attitudes, and actions of an important group of decision-makers". USDA Forest Service, Northeastern Forest Experiment Station. p. 17. Call Number: SD11.N57.b #219.

Lawrence, J. H. and L. H. Hardesty (1992). "Mapping the territory: agroforestry awareness among Washington State land managers." Agroforestry Systems 19(1) p. 27-36.

There is growing interest in research to develop potential agroforestry models for temperate climates. In Washington State, USA, recent studies and anecdotal information suggest that agroforestry is already employed by land managers, and if so, this experience should inform future research efforts. Because this population is not well defined, a mail survey was designed to:(1) assess Washington land manager awareness of agroforestry; (2) assess perceptions of agroforestry as a land management tool; (3) assess the perceived potential opportunities or obstacles for land managers to practice agroforestry; and (4) identify landowner groups believed to be practising agroforestry in Washington State. Three groups of land managers were surveyed in August 1989: employees of the Soil Conservation Service (SCS); employees of the Washington State University Cooperative Extension Service (WSUCE); and others, consisting of university faculty members, private land managers, state and federal land managers and owners of small natural resource businesses. The response rate to the survey was 45%. Agroforestry was not a new concept for most (94%) respondents, and 55% of those familiar with it were practising agroforestry or providing advice to landowners who were practising agroforestry. 'Use in (government mandated) soil conservation plans' on farmland (100% of all respondents) was the most frequently cited potential application for agroforestry in the state, followed by 'range and pasture land' and 'managing non-commercial forest land' (both 84%), use on 'commercial forest plantations' (83%), and 'fruit and nut orchards' (61%). The four most frequently cited potential advantages to practising agroforestry were: land use diversity (25%); enhanced productivity (18%); aesthetics (13%); and income diversity (13%). The most frequently identified potential obstacles to practising agroforestry were: lack of information (28%); lack of technical assistance (18%); establishment costs (14%); and the fact that it is not an established practice (14%). The responses suggested there is great potential for application of agroforestry throughout the state, and non-industrial private forest land owners were selected for future study of this potential.

Lawrence, J. H., L. H. Hardesty, et al. (1992). "Agroforestry practices of non-industrial private forest landowners in Washington State." Agroforestry Systems 19(1) p. 37-55.

A mail survey was conducted to gain understanding of the agroforestry practices of non-industrial private forest landowners (NIPF) in Washington State, USA. Although NIPF owners control 1.5 million hectares of the state's commercial forest land base, their diversity of forest land uses, land management practices and objectives as land managers are not well understood. Past NIPF surveys and anecdotal information suggest that agroforestry is a major use of NIPF lands. The objectives of the study were to: (1) determine the extent that agroforestry is used by Washington's NIPF owners; (2) develop insight into NIPF owners' motivations for practising agroforestry; (3) describe the agroforestry practices within three distinct physiographic and agroecological zones in Washington; and (4) determine the agroforestry information

needs of NIPF owners. The target population consisted of NIPF owners in 4 counties within each of the three regions. Response to the mail survey (in August 1990) was 63.5%, yielding 296 useable questionnaires. Some 57% of all respondents practised agroforestry. Forest land grazing was the most common practice (39% of all respondents), followed by windbreaks (34%), harvest of special forest products (12%), livestock enrichment plantings for forage or shelter (7%), orchard grazing (5%), orchard intercropping (2%), and Christmas tree grazing (0.34%). The most frequent motives for owning land were passing it on to children (80%), and keeping it natural and income from timber (both 72%). Respondents saw aesthetics (77%), increasing land unit income (74%), and water conservation (70%) as possible advantages of practising agroforestry. High establishment costs (66%) and livestock damage to trees or crops (64%) were the most frequently selected potential disadvantages to practising agroforestry. Lack of technical and educational support (67%) and lack of access to livestock/livestock facilities (58%) were disincentives to practising agroforestry. Landowners were interested in learning more about agroforestry and how agroforestry techniques might be incorporated into land management. A significant number of NIPF owners in Washington believed that management of forest land, balancing conservation and production goals, could be furthered by suitable agroforestry practices.

Lindsay, J. J. G. A. H. a. B. T. W. (1992). "Factors affecting the availability of wood energy from nonindustrial private forest lands in the Northeast". U.S. Forest Service. Resource Bulletin NE-12. p. 19.

Lippke, B. a. B. B. (1997). "Viability of the Non-industrial Private Forest Sector in Washington State". Unpublished paper? College of Forest Resources, University of Washington. On file? Y.

Lonnstedt, L. (1989). “Goals and Cutting Decisions of Private Small Forest Owners.” Scandinavian Journal of Forest Research . On file? Y.

Lonnstedt, L. (1997). “Non-industrial private forest owners' decision process: a qualitative study about goals, time perspective, opportunities and alternatives.” Scandinavian Journal of Forest Research 12(3) p. 302-310.

In the Nordic countries, the non-industrial private forest (NIPF) owners play an important role in the roundwood market, and are essential to the successful implementation of environmental policies. However, little is known about the owners as managers - their goals, procedures for identifying harvesting opportunities, or the selection of buyers and price options. A qualitative analysis was made of these issues, based on personal interviews with 35 owners. The results show that an overriding objective influencing the harvesting patterns of the owners, is to preserve and develop the property. A variety of formal and informal economic, production, environmental, and intangible goals are influenced by this overriding objective. In addition to relying on their own observations of price changes and the recommendations of the forest management plan, owners identify harvesting opportunities through neighbours, friends, timber buyers, or extension rangers. Usually the owner uses the same selling form from one time to the next. Dissatisfaction with the result of the last harvest, however, may trigger a search for new options.

Luloff, A. E., K. P. Wilkinson, et al. (1994). Timber, activism, and dialogue: the NIPF community and general public of Pennsylvania. Proc-Soc-Am-For-Natl-Conv, Bethesda, MD., p. 315-320. Call Number: 634.906 SOP.

Lyons, J. R. (1983). “The real problem with nonindustrial private forests.” Journal of Forestry 81 p. 518. Call Number: 634.905 J.

Magill, A. W. (1991). Human behavior: the missing part of the equation. Proc-Soc-Am-For-Natl-Conv., Bethesda, Md., p. 183-186. Call Number: 634.906 SOP.

Marty, T. D., W. B. Kurtz, et al. (1988). “PNIF owner attitudes in the Midwest: a case study in Missouri and Wisconsin.” Northern Journal of Applied Forestry 5(3) p. 194-197. Call Number: SD1.N676. On file? Y.

McKetta, C., K. A. Blatner, et al. “Human dimensions of forest health choices.” Journal of Sustainable Forestry 2(1/2) p. 135-149.

McNabb, K. and J. C. Bliss (1994). "Nonindustrial private forest owner attitudes toward the use of silvicultural herbicides." Journal of Nat Resources Life Science Education 23(1) p. 46-50.

Mills, W. L. J., Hoover, W. L., McNamara, K. T., and V. Nagubadi (1996). "Factors influencing participation in public management assistance programs." Woodland Steward 5(2) p. 6-7,9.

Nagubadi, V., K. T. McNamara, et al. (1996). "Program participation behavior of nonindustrial forest landowners: a probit analysis." Journal of Agriculture and Applied Economics 28(2) p. 323-336.

This study provides an analysis of nonindustrial private forest (NIPF) landowners' participation in forestry assistance programs. A probit model was used for data collected from a random sample of 329 Indiana landowners. The analysis revealed that total land owned, commercial reasons for ownership, government sources of information, and membership in forestry organizations influenced NIPF landowners' program participation. Age, fear of loss of property rights, and duration since the first wooded tract was acquired also influenced program participation. Location of landowners' residence on their wooded land and landowners' knowledge of and willingness to participate in a conservation easement influenced the participation in cost-share programs.

O'Hara, T. J. and A. S. Reed (1991). "Timber market development from private forests in northwestern Minnesota." Northern Journal of Applied Forestry 8(4) p. 153-155. Call Number: SD1.N676.

Expanding timber industries in Minnesota are increasing the demand for timber. Questions about the suitability of public lands to increase timber output imply a more significant role for nonindustrial private forest (NIPF) land. Surveys of both NIPF landowners and industry in a five-county region assessed NIPF owner marketing behavior and opportunities to increase timber utilization from these lands. Results showed that former experiences of owners are suggestive of future behavior. Landowners who had used forestry advice in the past displayed a greater willingness to harvest timber than nonusers of forestry advice. Absentee owners in the study area represented a reserve of comparatively underutilized timber and expressed a need for marketing process guidance including timber pricing information. Industry respodents forecast increased reliance on NIPF timber and were dedicated to greater contributions of time and financial support of programs to stimulate timber harvesting and management on NIPF lands.

Pesonen, M. (1995). "Non-industrial private forest landowners' choices of timber management strategies and potential allowable cut: case of Pohjois-Savo." Acta Forestalia Fennica No. 247 p. 31.

In the study, the potential allowable cut in the district of Pohjois-Savo - based on the non-industrial private forest landowners' (NIPF) landowners' choices of timber management strategies - was clarified. Alternative timber management strategies were generated, and the choices and factors affecting the choices of timber management strategies by NIPF landowners were studied. The choices of timber management strategies were solved by maximizing the utility functions of the NIPF landowners. The parameters of the utility functions were estimated using the Analytic Hierarchy Process (AHP). The level of the potential allowable cut was compared to the cutting budgets based on the 7th and 8th National Forest Inventories (NFI7 and NFI8), to the combining of private forestry plans, and to the realized drain from non-industrial private forests. The potential allowable cut was calculated using the same MELA system as has been used in the calculation of the national cutting budget. The data consisted of the NIPF holdings (from the TASO planning system) that had been inventoried compartmentwise and had forestry plans made during the years 1984-1992. The NIPF landowners' choices of timber management strategies were clarified by a two-phase mail inquiry.

Pesonen, M., P. Rasanen, et al. (1995). "Modelling non-industrial private forest landowners' strategic decision making by using logistic regression and neural networks: case of predicting the choice of forest taxation basis." Silva Fennica 29(2) p. 171-186. Call Number: 634.905 SI.

In this study, logistic regression and neural networks were used to predict non-industrial private forest (NIPF) landowners' choice of forest taxation basis. The main frame of reference of the study was the Finnish capital taxation reform of 1993. As a consequence of the reform, landowners were required to choose whether to be taxed according to site-productivity or realized-income during the coming transition period of thirteen years. The most important factor affecting the landowners' choice of taxation basis was the harvest rate during the transition period, i.e., the chosen timber management strategy. Furthermore, the

estimated personal marginal tax rate and the intention to cut timber during next three years affected the choice. The descriptive landowner variables did not have any marked effect on the choice of forest taxation basis. On average, logistic regression predicted 71% of the choices correctly; the corresponding figure for neural networks was 63%. In both methods, the choice of site-productivity taxation was predicted more accurately than the choice of realized-income taxation. An increase in the number of model variables did not significantly improve the results of neural networks and logistic regression.

Plantinga, A. J. and J. Buongiorno (1990). "Determinants of changes in non-industrial private timberland ownership in the United States." Journal of World Forest Resource Management 5(1) p. 29-46.

Powell, D. H. (1983). Industry's NIPF initiatives: managing for productivity. Nonindustrial private forests : a review of economic and policy studies : symposium proceedings,, Durham, N.C., School of Forestry and Environmental Studies, Duke University. p. 19-22.

Rosen, B. N. (1984). "Price reporting of forest products to nonindustrial private forest landowners [United States]." Journal of Forestry 82(8) p. 491-495. Call Number: 634.905 J.

Rosen, B. N. (1995). "A longitudinal analysis of attitudes and marketing practices of non-industrial private forest landowners." Northern Journal of Applied Forestry 12(4) p. 174-179. Call Number: SD1.N676.

Rosen, B. N., H. F. Kaiser, et al. (1989). "Nonindustrial private forest landowners as timber marketers: a field study of search for market information and decision quality." Forest Science 35(3) p. 732-744. Call Number: SD1.F69.

While it is widely assumed that nonindustrial private forest (NIPF) landowners need better information on timber markets, no studies have examined the actual extent, quality and determinants of NIPF owners' search and decisions. Drawing from the consumer behavior literature on search and decision processes, this paper proposes that because NIPF landowners are nonprofessional marketers, their search and decision processes as sellers may be similar to those they execute as consumers. Based on that theoretical framework, the paper presents the results of a field study of search and usage of market information by NIPF timber marketers in New York state. The study found that owners typically engage in little search and that their harvesting decisions differ greatly from professionally determined norms. The results suggest that future NIPF educational efforts should focus on three objectives: (1) making owners more aware of the returns to better search and decisions, (2) informing owners about the availability, role, and value of alternative sources; and (3) teaching owners how to use that information.

Salkie, F. J., M. K. Luckert, et al. (1995). "An economic analysis of landowner propensity for woodlot management and harvesting in northwestern Saskatchewan." Forest Chronicle 71(4) p. 451-458. Call Number: 634.905 FC. On file? Y.

The recent development of new processing facilities in Meadow Lake, Saskatchewan has created a long-term market for timber in the region. Although these processing facilities are currently supplied by crown timber reserves, increasing pressure on public forest resources from multiple users has caused processors to consider private woodlots as a supplemental source of fibre. A survey was undertaken to investigate conditions under which landowners may respond to the emerging demand by managing their timber resources for harvest and sale. Survey results indicate that, although virtually no management or harvesting has occurred in the past, approximately half of those interviewed would consider timber management and harvesting in the future. Logit analysis identified landowner characteristics that were related to landowners' willingness to consider forest management and harvest in the future and the likelihood that they would consider a timber contract. Significant characteristics of landowners in influencing the propensity to manage and harvest their woodlots included: the diversity of farm operations, the length of family tenure of the land, the number of ways respondents use their forest land, and area of forest owned. A preferred timber contract was identified as having: a duration of 1 to 5 years, young growth established at the end of the contract term, and payments for harvesting and management services made through a crop share arrangement.

Schnepf, C. C. and W. E. Schlosser (1995). Using focus groups to assess non-industrial private forest (NIPF) owners' needs. Proceedings of the Society of American Foresters National Convention, Bethesda, MD., p. 533-534. Call Number: 634.906 SOP.

Schuster, E. G. (1983). "Evaluating nonindustrial private landowners for forestry assistance programs: a logistic regression approach [Forest management, Montana]". Ogden, Utah. USDA For Serv U S Intermountain For Range Exp Stn. p. 7. Call Number: SD11.A4552. On file? Y.

Teel, W. S. and J. P. Lassoie (1991). "Woodland management and agroforestry potential among dairy farmers in Lewis County, New York." Forest Chronicle 67(3) p. 236-242.

The purpose of this study was to assess the current level of woodland management by dairy farmers in Lewis County, New York, and determine types of woodland management or agroforestry strategies that could benefit them. Basic procedures followed were those of Diagnosis and Design Methodology as defined by the International Council for Research in Agroforestry, supplemented by Farming Systems Research strategies. Hypotheses concerning woodland management were developed and tested using a mail questionnaire, and on-farm and telephone interviews. It was found that respondents could be divided into six categories: dairy farmers with a managed sugarbush, dairy farmers with woods, dairy farmers with no woods, non-dairy farmers with a managed sugarbush. non-dairy farmers with woods, and non-dairy farmers with no woods. Most dairy farmers who had woods reported that they conducted at least one management activity (e.g., management plan, plant trees, harvest trees, etc.). Active sugarbush managers were found to be the most intensive managers of woodlands. The most important reasons for this were their annual involvement with the woods during the late winter sugar season and the presence of access roads. Dairy farmers not having a sugarbush, but reporting efforts to improve access roads, had a much higher level of woodland management than those who did not. Also, there was a strong indication that farmers of land with poor soils for crops had higher woodland management levels than those with good soils. Agroforestry as a concept was not well known among farmers, but there was receptivity among some to certain agroforestry practices, and an expressed desire to do more in their woodlands. They were the most interested in using "treeshelters" to protect young seedlings to convert under-utilized pastures to woodland while allowing some livestock grazing on the land. Other practices of interest included establishing shelterbelts and hedgerows, planting fencelines and roadsides using a variety of species including sugar maple (Acer saccharum), and establishing small coppice woodlots or plantations of valuable timber species. Woodland management and agroforestry practices appear to have potential to expand among dairy farmers in Lewis County, New York, but a different programming approach is probably needed from Cooperative Extension to facilitate this expansion. For example, more attention should be paid to the constraints of farmers as well as to their specific interests, and steps need to be taken to involve them in the development and implementation of agroforestry schemes on their farms. Given such an approach and enough time, agroforestry practices could become incorporated into dairy farms in Lewis County, and possibly into farming systems throughout the northeastern United States.

Thompson, M. T. (199?). "A forested tract-size profile of South Carolina's NIPF landowners". Asheville, NC. U.S. Dept. of Agriculture, Forest Service, Southern Research Station. p. 9. Call Number: SD11.A583.

Thrift, T., Thomas Straka, Allan Marsinko and Jeffery Baumann (1997). "Forest Resource Management Plans: Importance of Plan Components to Nonindustrial Private Forest Landowners in South Carolina." Southern Journal of Applied Forestry 21(4) . Call Number: SD1.S693. On file? Y.

Turner, R., C. M. Newton, et al. (1991). "Economic relationships between parcel characteristics and price in the market for Vermont forestland." Forest Science 37(4) p. 1150-1162. Call Number: SD1.F69.

An implicit price model is used to analyze the market for forestland in Vermont. Data were collected on physical and locational characteristics associated with a sample of recent sales (100-500 ac tracts). Least squares regression was used to identify marginal implicit prices of the characteristics. More than 46% of the variation in price per acre was explained by the set of characteristics and all significant characteristics influenced the price in the expected direction. Parcel size had little effect on price per acre; however, the presence of road frontage, the presence of open land, increases in population, proximity to major roads and ski areas, and lower taxes all contributed to higher prices.

Weatherhead, D. J., R. C. Chapman, et al. (1982). "Characteristics of NIPF landowners of Spokane County, Washington". Pullman, WA. Wash State Univ Agric Res Cent. p. 32.

Widmann, R. H. and T. W. Birch (1988). "Forestland owners of Vermont - 1983". Northeastern Forest Experiment Station, USDA Forest Service. p. 89. Call Number: SD11.A47562.

Results are given of the analysis of 412 responses to a mail questionnaire. Some 90% of timberland in Vermont is privately owned, and private individuals own 77% of private timberland. Tables show landowner characteristics, attitudes and intentions in relation to reasons for owning timberland, recreational use, timber management and logging.

Young, R. A., M. R. Reichenbach, et al. (1985). "PNIF management: a social-psychological study of owners in Illinois." Northern-Journal-of-Applied-Forestry 2(3) p. 91-94. Call Number: SD1.N676.

A random sample of farm owners and operators was contacted in 1983 to see if they owned private non-industrial forest land (NIPF); those that did were asked to complete a telephone questionnaire including their reasons for owning woodland. Timber production ranked low in their objectives with wildlife and landscape interests at the top of the list. Methods of increasing interest in management for wood production are discussed.

Zhang, D., Sarah Warren and Conner Bailey (1998). "The Role of Assistance Foresters in Nonindustrial Private Forest Management: Alabama Landowners' Perspectives." Southern Journal of Applied Forestry . Call Number: SD1.S693. On file? Y.

Zhang, D. and D. W. Zhang (1996). "Assistance foresters in nonindustrial private forest management: Alabama landowners perspectives". Highlights-of-Agricultural-Research, Alabama-Agricultural-Experiment-Station. p. 10-12.

A survey in spring 1996 showed that public and private assistance foresters play a particularly strong role in advising nonindustrial private forest (NIPF) landowners in Alabama. About 50% of all NIPF management activities have received assistance during 1986-95. About 72% of forest land in Alabama is in private, nonindustrial ownership, but many rely on the expertise and information of assistance foresters to ensure efficient markets and sound forest management.

Special Forest Products

(1963). "Special forest products for profit : self-help suggestions for rural areas development". Washington, D.C. U.S. Dept. of Agriculture, Forest Service. Agriculture information bulletin ; no. 278 n1. p. 64.

(1989). "Rural development opportunities in special forest products". Washington, D.C. United States Forest Service. Cooperative Forestry. p. 23.

(1992). "Analysis and development of a conceptual business plan for establishing a special forest products processing plant : final report." .

(1993). "The Forest beyond the trees : a browser's guide to special forest products". Portland, OR. U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Region, Olympic National Forest.

(1994). "Special forest products". USDA Forest Service, Pacific Northwest Region. U.S. Dept. of Interior, Bureau of Land Management, Oregon/Washington State Office. Shipping list no.: 94-0042-P. p. 1 sheet.

(1997). Non-timber Forest Products Theme Group Meeting: Summary Report. Non-timber Forest Products Theme Group Meeting: Summary Report, Unpublished notes summarizing meeting on non-timber forest product issues. On file? Y.

(1997). "Standards and Guidelines for the Harvest of Special Forest Products: Floral Products". Flora Pacifica, Inc. On file? Y.

(1998). Special Forest Products: Working Together in a Changing World. Special Forest Products: Working Together in a Changing World, Unpublished memo. On file? Y.

(?). "Special Forest Products." Brochure published by USFS Pacific Northwest Region and BLM Oregon and Washington Office . On file? Y.

(?). "The Trees beyond the Trees: a Browsers Guide to Special Forest Products". USFS Pacific Northwest Region - Olympic National Forest. On file? Y.

Amaranthus, M. (1994). Science, society, and special forest products. Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition, Hillsboro, OR, Western Forestry and Conservation Association. p. 139-141.

Anderson, S., T. G. Bidwell, et al. (1991). "Introduction to agroforestry alternatives". Stillwater, Okla. Oklahoma State University Cooperative Extension Service. p. 6.

Anderson, S. and D. Marcouiller (1990). "Growing Shiitake mushrooms". Stillwater, Okla. Okla State Univ Coop Ext Serv. p. 6.

Anderson, S. and D. Marcouiller (1991). "Introduction to growing Christmas trees". Stillwater, Okla. Oklahoma State University Cooperative Extension. p. 6.

Blatner, K. A. (1997). "Special forest product markets in the Pacific Northwest with global implications". Special forest products: Biodiversity meets the marketplace. N. C. a. T. Vance, J. U.S. Forest Service. General Technical Report GTR-WO-63. p. 42-53. Call Number: SD!!.P3a.

Blouin, G. (1989). Alternative markets and specialty products from private woodlots. SILVILOG '88 Conferences, Forestry Canada, Quebec Region. p. 97-109.

Busby, R. L. and J. E. Granskog (1995). Sustaining people in Louisiana's Forests: Special product opportunities. Proceedings of the 1995 Society of American Foresters Convention, Portland, Maine, SAF. Call Number: 634.906 SOP.

Carlson, M. (1994). Meet the new Special Forest Products Association. Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition, Hillsboro, OR, Western Forestry and Conservation Association. p. 163-166.

Carroll, M. N. (1977). Bark utilization. Forest utilization symposium proceeding, Winnipeg, Manitoba, Canada, Forintek Canada Corp., Western Forest Products Laboratory. p. 7-8.

Christensen, C. (?). "Edible Wild Mushrooms". University of Minnesota Agricultural Extension Service. On file? Y.

Cohn, L. (1995). "The growing market for special forest products: An opportunity and challenge." Forest Perspectives 4(4) p. 4-7.

Crane, B. (1989). "Hunting leases: Income for woodland owners." National Woodlands 12(4) p. 5-7. Call Number: SD387.W7 N35.

Dix, M. E. F. J. and L. Buck (1996). "Growing special forest products in agroforestry systems." Inside Agroforestry Wtr 1996 p. 3-5.

Douglass, B. S. and F. A. t. Bush (1978). The importance of special forest products. Proceedings of the Eighth World Forestry Congress, Jakarta, p. 18.
In the Pacific NW USA, Christmas trees, fuelwood and split cedar products (shingles, fencing materials, poles and stakes) are the main special forest products followed by decorative greenery, tree seed, drugs, small roundwood, fruit, etc.

Engineering, M. (1992). "Analysis and development of a conceptual business plan for establishing a special forest products processing plant". Corvallis, OR. Mater Engineering, Ltd. p. 234.

Evans, J. (1984). "Management for non-wood values". Silviculture of Broadleaved Woodland. Great Britain Forestry Commission. 62. p. 127-152.

Foster, S. (1997). "Medicinal plant development in the United States". Special forest products: Biodiversity meets the marketplace. N. C. a. T. Vance, J. U.S. Forest Service. General Technical Report GTR-WO-63. p. 26-41. Call Number: SD11.A479.

Freed, J. (1995). "Special forest products: Past, present, future." Journal of Ecoforestry 11(2/3) p. 62-67.

Freed, J. (?). "Forest Stewardship Planning: Special Forest Products". Unpublished memo. On file? Y.

Gorman, T. (1997). "Products Made from Small-diameter and Underutilized Trees".

Grafton, W. N. (1989). Income Opportunities for the Private Landowner Through Management of Natural Resources and Recreational Access. 1st ed. Proceedings from the Conference on Income Opportunities for the Private Landowner Through Management of Natural Resources and Recreational Access., Wheeling, W. Va., West Virginia University Extension Service ; [College Park, Md.] : Cooperative Extension Service, University of Maryland System. p. 414.

Hankins, A. G. "A rural perspective of agricultural and small woodlot income alternatives". Alternative enterprises: Rural and urban perspective. West Virginia University, Extension Service. R.D. no. 749. p. 16-27.

Hansis, R. (1996). “The harvesting of special forest products by Latinos and Southeast Asians in the Pacific Northwest: Preliminary observations.” Society and Natural Resources 9(6) p. 611-615.

Hosford, D., David Pilz, Randy Molina, and Michael Amaranthus (1997). "Ecology and Management of the Commercially Harvested American Matsutake Mushroom". USDA Forest Service - Pacific Northwest Research Station. Call Number: SD11.A479. On file? Y.

Institute, M. R. (1992). "Seeing the forest instead of the trees: Forest-based microenterprise ideas. Specialty wood products". Kansas City, MO. Midwest Research Institute. MRI Technical Paper no. 92-14. p. 15.

Irland, L. C. (1989). Nontimber forest products in the Northeast: A marketing perspective. Vision of an Indian forest - Total resource management: Thirteenth Annual National Indian Timber Symposium, Phoenix, AZ, Intertribal Timber Council. p. 264-279.

Johnson, R. (1995). “Supplemental sources of income for Southern timberland owners.” Journal of Forestry 93(3) p. 22-24. Call Number: 634.905 J.

Jones, S. G. (1997). Special forest products: A cornucopia of income opportunities for private landowners. Knowledge for the future of black walnut: Proceedings of the Fifth Black Walnut Symposium, Stockton, MO, U.S. Forest Service. p. 53-57.

Jungwirth, L. a. B. B. A. (1997). "Special forest products in a forest community strategy and co-management schemes addressing multicultural conflicts". Special forest products: Biodiversity meets the marketplace. N. C. a. T. Vance, J. U.S. Forest Service. General Technical Report GTR-WO-63. p. 88-107.

Kingery, P. a. S. W. E. (1992). “Timber and floral greens: A look at the "special forest products industry".” National Woodlands 15(4) p. 14-15. Call Number: SD387.W7 N35.

Kronrad, G. D. a. A. C. A. (1985). “Consultants can help landowners manage for "non-traditional" forest products.” National Woodlands 8(6) p. 8-9. Call Number: SD387.W7 N35.

Lamb, R. "More than wood: Special options on multiple use of forests". Rome, Italy. FAO Forestry Department,. Forestry Topics Report no. 4. p. 52.

Little, J. B. (1996). “Fungi & ferns: market thriving for nontimber forest products.” American Forests 102(3) p. 20. Call Number: 634.905 AM.

Love, T. a. J. E. (1997). "Grounds for argument: local understandings, science, and global processes in special forest products harvesting". Special forest products: Biodiversity meets the marketplace. N. C. a. T. Vance, J. U.S. Forest Service. General Technical Report GTR-WO-63. p. 70-87.

Marcouiller, D. and S. Anderson (1989). "Managing your woodlot for firewood". Stillwater, Okla. Coop Ext Serv Okla State Univ. p. 4.

Mater, C. (1993). "Minnesota special forest products: A market study". Minnesota Dept. of Natural Resources, Division of Forestry. p. 118.

Mater, C. M. (1993). "Minnesota special forest products". St. Paul, MN. Mater Engineering, Ltd.

Mater, C. M. (1997). "Consumer trends, market opportunities, and new approaches to sustainable development of special forest products". Special forest products: Biodiversity meets the marketplace. N. C. a. T. Vance, J. U.S. Forest Service. General Technical Report GTR-WO-63. p. 8-25.

Mater Engineering, L. (1992). "Analysis and development of a conceptual business plan for establishing a special forest products processing plant : final report". Corvallis, OR. United States Forest Service. Pacific Northwest Region. Sweet Home SFP study.

Mater, J. (1990). “Value-added products: Key to competition.” Forest Industries 117(2) p. 20-22.

McWilliams, J. (?). "Structure and significance of the value-added wood products industry in British Columbia". Victoria, B.C. Pacific Forestry Centre; B.C. Ministry of Forests. p. 22.

Mohlina, R. and et al. (1997). "Special forest products: Integrating social, economic, and biological considerations into ecosystem management". Creating a forestry for the 21st century: The science of ecosystem management. K. A. a. F. Kohm, J.F. Washington, DC,, Island Press. p. 315-336.

Noda, H. (1988). "Policy relating to special forest products". Forest policy in Japan. R. Handa. p. 295-308.

Puettmann, K. a. H. D. E. (1993). Fuelwood management: Opportunities and options. Oregon State University Extension Service. p. 33.

Raatikainen, M. e. (1988). Soviet-Finnish Symposium on Exploitation of Non-Timber Forest Resources, 2d,. Acta Botanica Fennica 149:1-39., Petrozavodsk, Russia,

Rhodes, D. (1998). "Introduction to Washington and Oregon Special Forest Products Industry". Unpublished draft. On file? Y.

Richards, R. T. and M. Creasy (1996). “Ethnic diversity, resource values, and ecosystem management: matsutake mushroom harvesting in the Klamath bioregion.” Society and Natural Resources 9(4) p. 359-374.

Savage, M. (1995). “Pacific Northwest special forest products: an industry in transition.” Journal of Forestry 93(3) p. 6-11. Call Number: 634.905 J.

Savage, M. (1996). "Trip to Denmark". Unpublished draft by author. On file? Y.

Schlosser, W. E. and K. A. Blatner (1990). "The special forest products industry 1989". Pullman, Wash. IMPACT, College of Agriculture & Home Economics, Washington State University. p. 13.

Schlosser, W. E. and K. A. Blatner (1995). “The wild edible mushroom industry of Washington, Oregon and Idaho: a 1992 survey.” Journal of Forestry 93(3) p. 31-36. Call Number: 634.905 J.

Results are summarized from a survey of mushroom processors in Washington, Oregon and Idaho. The survey also attempted to contact all processors who were based outside these states, but who purchased mushrooms in the region in 1992. The survey results include estimates of the volume and value of mushrooms harvested in forests by species, major markets, contribution to the regional economy, and characteristics of harvesters and processors.

Schlosser, W. E. and K. A. Blatner (1997). "Special forest products: An east-side perspective". Portland, OR. Pacific Northwest Research Station, USDA. Call Number: SD11.A479.

The special (non-wood) forest products industry has gained increasing attention, as timber harvest levels in the Pacific Northwest have declined, and has been heralded, at least by some, as a partial solution to the employment problems common throughout the rural areas of Washington, Oregon, Idaho, and Montana. To date, relatively little work has been published on those portions of the industry located east of the Cascade Range. Yet the east side produced about 48% of the total wild edible mushroom harvest (about 1.9 million pounds worth $11.8 million) during 1992. The region also accounts for all of the baby's breath harvested in the Pacific Northwest and has the potential to produce large quantities of other floral products. It also seems to have the potential to become an important producer of other edible species and medicinal products; however, relatively little is known about this segment of the industry. The following report provides an overview of the special forest products industry east of the Cascade Range and evaluates its potential for expansion.

Schlosser, W. E., K. A. Blatner, et al. (1990). "Special forest products buyers processors in the Pacific Northwest and Coastal British Columbia". Pullman, WA. Wash State Univ Coop Ext Serv. p. 4.

Schlosser, W. E., K. A. Blatner, et al. (1994). Special forest products in the Inland Pacific Northwest: current scope and potential for expansion. Interior cedar hemlock white pine forests: ecology and management. Symposium proceedings,, The Ridpath Hotel, Spokane, Washington, USA, Washington State University Cooperative Extension; Pullman, Washington; USA.

The special forest products industry, comprising floral greens, Christmas trees, wild edible mushrooms, other edibles and medicinals, and taxol [paclitaxel] from Pacific yew [Taxus brevifolia], creates employment for 29 000-31 000 individuals in the Pacific Northwest and Northern Rockies of the USA, with significant revenue. Although small in the region, there is potential for expansion in the cedar/hemlock/white pine forests of the Northern Rockies.

Schlosser, W. E., K. A. Blatner, et al. (1991). "Economic and marketing implications of special forest products harvest in the Coastal Pacific Northwest." Western Journal of Applied Forestry 6(3) p. 67-72.

Schlosser, W. E., K. A. Blatner, et al. (1995). "Potential for expansion of the special forest products industry in the northern Rockies." Western Journal of Applied Forestry 10(4) p. 138-143.

The special forest products industry has the potential of making substantial contributions to the troubled forest-based economies of the Northern Rockies (northeastern Washington, northern Idaho and northwestern Montana). Comprised of floral greens, Christmas ornamentals, wild edible mushrooms, other edibles and medicinals, and Pacific yew (Taxus brevifolia) segments, the industry has the potential to provide both full-time and part-time employment on a nearly year-round basis. The region's natural resource base and available labour supply seem well-suited to developing special forest products firms. The existing transportation system and business environment is also well suited to expansion of this industry.

Schlosser, W. E., K. A. Blatner, et al. (1992). "Pacific Northwest forest lands potential for floral greenery production." Northwest Science (Official Publication of the Northwest Science Association) 66(1) p. 44-55.

Schlosser, W. E., C. T. Roche, et al. (1992). "A guide to floral greens: special forest products". Cooperative Extension, College of Agriculture and Home Economics, Washington State University. p. 10.

Notes are given on the habit, leaves, fruit, desirable characteristics, product use, ecology, range, reaction to silviculture and forage value of Berberis nervosa, Blechnum spicant, Cytisus scoparius, Gaultheria shallon, Pachistima myrsinites [Paxistima myrsinites], Polystichum munitum, Vaccinium ovatum and Xerophyllum tenax, understorey plants in the Pacific Northwest.

Schlosser, W. E. a. B. K. A. (1994). An economic overview of the special forest products industry. Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition, ., Hillsboro, OR, Western Forestry and Conservation Association. p. 11-22.

Schnepf, C. C. (1992). "Special forest products". Moscow, ID. Agricultural Extension Service, Agricultural Experiment Station, College of Agriculture, University of Idaho,. p. 3.

Schnepf, C. e. (1994). Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition, , Jan. 26-27, 1994. Hillsboro, OR, Western Forestry and Conservation Association. p. 212.

Scott, K. (1994). Economic development of the special forest products industry of the Willamette Valley. Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition,, Hillsboro, OR, Western Forestry and Conservation Association. p. 175-178.

Service, U. S. F. (1989). "Rural development opportunities in special forest products". U.S. Forest Service, Cooperative Forestry. p. 20.

Tan, L. C., Ruiz Perez, M., and M. Ibach "Non-timber forest product databases". Jakarta, Indonesia. Center for International Forestry Research.

Thomas, M. (1993). Sustainable development and special forest products. Proceedings of IUFRO Symposium Forestry and Rural Development in Industrialized Countries: Where are we going?, Fredericton, N.B., Canada, Natural Resources Canada. p. 132-146.

Thomas, M. G. and D. R. Schumann (1992). "Seeing the forest instead of the trees : income opportunities in special forest products". Kansas City, Mo. Midwest Research Institute.

Thomas, M. G. and D. R. Schumann (1993). "Income opportunities in special forest products. Self-help suggestions for rural entrepreneurs". Washington, DC. US Department of Agriculture, Economic Research Service. p. 206.

Products discussed in each chapter are: aromatics; berries and wild fruits; charcoal; chips, shavings and excelsior, sawdust, bark, and pine straw; cones and seeds; cooking wood, smoke wood and flavour-wood; decorative wood; forest plants as flavourings, medicines and pharmaceuticals; greenery, transplants and floral products; honey; mushrooms; nuts; recreation and wildlife enterprises; maple syrup; weaving and dyeing materials; and speciality wood products. Each chapter describes market and competition considerations, distribution and packaging, equipment needs, and resource conservation, and presents a profile of a rural business marketing the products in the USA.

Tjaden, R. L. (1990). "An urbanizing perspective: Use of forest and woodland alternatives". Alternative enterprises: Rural and urban perspective. West Virginia University, Extension Service. R.D. no. 749. p. 1-15. On file? Y (other chapters).

University, C. (1995). "Seventh Southeastern Landowner Seminar: Alternative enterprises/opportunities for your forest land". Savannah, GA. Clemson University Cooperative Extension Service, University of Georgia Cooperative Extension Service.

Vance, N. C. a. T., J. editors (1997). "Special forest products: Biodiversity meets the marketplace". U.S. Forest Service. General Technical Report GTR-WO-63. p. 163.

Vogt, C. E. (1997). Additional forest crops. Proceedings: Woodland Owners and Users Conference, Brainerd, MN, University of Minnesota, Minnesota Extension Service. p. 83-92.

von Hagen, B., James F. Weigand, Rebecca McLain, Roger Fight, Harriet H. Christensen (1996). "Conservation and Development of Nontimber Forest Products in the Pacific Northwest: an Annotated Bibliography". Portland, OR. USDA Forest Service Pacific Northwest Research Station.

Wetter, M. (1994). Business strategies in special forest products. Dancing with an elephant. Proceedings: The business and science of special forest products; a conference and exposition, Hillsboro, OR, Western Forestry and Conservation Association. p. 159-162.

Whiting, G. H., R. Elwell, et al. (1990). "Forest product research". Orono, Me. Univ Maine Agric Exp Stn. p. 25-28.

Urban/Rural Fringe

Baker, C. (1992). Conserving the Forest Land Base under the Washington Growth Management Act: A Status Report on Implementation. Forest Resources. University of Washington.

Bradley, G. A., Ed. (1984). Land Use and Forest Resources in a Changing Environment: the Urban/Forest Interface. Seattle, University of Washington Press. p. 222. Call Number: HD 256 L36 1984.

Bradley, G. A., Ed. (1995). Urban Forest Landscapes: Integrating Multidisciplinary Perspectives. Seattle, University of Washington Press. p. 224. On file? Y.

Bradshaw, T. D. (1987). "The intrusion of human population into forest and range lands of California". Berkeley, Calif. USDA Forest Service Pacific SW For Exp Stn. p. 15-21. Call Number: SD11.P3a. On file? N.

Case, K. M. and J. J. Lindsay (1996). "Forestland transfers in Vermont." Northern Journal of Applied Forestry 13(4) p. 175-179. Call Number: SD1.N676.

The sale and subdivision of private woodlands development cause the fragmentation of forest resources in the rapidly urbanizing Northeast. The objective of this study was to determine how active Vermont's forestland market was for parcel transfers of 100 ac and larger. Following 20 yr of constant price increases, the number and average price per acre of transfers decreased during the last 3 yr of the study. If forestland sales are linked to expanding economies, the next growth cycle will bring a resurgence in transfer activity, which is often the precursor of conversion. We recommend that the state, and perhaps the northeast region, develop a system to monitor NIPF conversion rates. Such a system would assist in developing new policies to sustain this important natural resource.

Chun, A. V., L. Gering, et al. (1996). Development of a model for defining and predicting the urban-wildland interface for LeFlore County, Oklahoma. Proc Soc Am For Natl Conv., Bethesda, MD, p. 394-395. Call Number: 634.906 SOP.

Cordell, H. K. (1993). "Effects of subdivision and access restrictions on private land recreation opportunities". Fort Collins, CO. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. p. 21. Call Number: Suxxalo Microforms A 13.88:RM-231. On file? N.

Dennis, D. F. (1992). "Parcelization and affluence: implications for nonindustrial private forests." Northern Journal of Applied Forestry 9(1) p. 33-35. Call Number: SD1.N676.

Gobster, P. H. (1994). "The urban savanna: reuniting ecological preference and function". Madison, WI. Published by the University of Wisconsin Press for the UW--Madison Arboretum. p. 64-71.

Harvey, R. D. and P. F. Hessburg (1992). "Long-range planning for developed sites in the Pacific Northwest: the context of hazard tree management". Portland, OR. United States. Forest Service. Pacific Northwest Region. p. 120.

Hollenbeck, E. C. (1979). Open Space at the Urban Periphery. p. 114. Call Number: Suzzalo G 59 Th27337. On file? N.

Johnson, R. L., M. W. Brunson, et al. (1994). "Using image-capture technology to assess scenic value at the urban/forest interface: a case study." Journal of Environmental Management 40(2) p. 183-195. Call Number: TD169.J67. On file? Y.

Knapp, K. (1982). The urban forestry-rural woodlot connection. Proceedings of the second National Urban Forestry Conference, Cincinnati, Ohio, American Forestry Association. p. 246-248.

Little, J. B. (1998). "The woods: reclaiming the neighborhood." American Forests 103(4) p. 12-13, 39-41. Call Number: 634.905 AM.

Oswald, D. D. (1984). "Timber resources in areas developed for nonforest use in western Washington". USDA Forest Service, Pacific Northwest Forest and Range Experiment Station. p. 20. Call Number: SD11.A486.

An account is given of the extent of timberland and the timber resources in each of 3 forest zones: primary forest with little or no nonforest development; low-density suburban or farming; and urban/residential/industrial.

Oswald, D. D. (1986). "Inventories of timber resources in urban and developed rural areas." Western Journal of Applied Forestry 1(4) p. 129-131. On file? Y.

Sargent, F. O., Paul Lusk, Jose A. Rivera and Maria Varela (1991). Rural Environmental Planning for Sustainable Communities. Washington D.C., Island Press. p. 254. On file? Y.

Wildlife

Allen, E. O. (1986). "Non-industrial private forest lands. Part IV - Wildlife management considerations for the small, private forest landowner in western Montana". Montana State University, Cooperative Extension Service. Montana Extension Forestry Digest 5(6). p. 4-7.

Askham, L. R. and D. M. Baumgartner (1986). "Moles". Pullman, WA. Wash State Univ Coop Ext Serv. p. 4.

Bromley, P. T., Starr J., Sims J. and Coffman D. (1990). A landowner's guide to wildlife abundance through forestry. Virginia Tech and Virginia State, Virginia Cooperative Extension Service. p. 26.

Brooks, R. T. and T. W. Birch (1986). "Opportunities and constraints for wildlife habitat management on private forests of the Northeast." Northern Journal of Applied Forestry 3(3) p. 109-113. Call Number: SD1.N676.

Data from surveys of the 14 States in NE USA are used to describe the non-industrial private forest resource, its owners, their attitudes towards forest management, and the opportunities for and constraints on wildlife habitat management on these lands. The owners appear ready to manage their forests for wildlife and methods of communicating management opportunities to the owners are discussed.

Brooks, R. T. and T. W. Birch (1988). Changes in New England forests and forest owners: implications for wildlife habitat resources and management. Trans North Am Wildl Nat Resour Conf, Washington, D.C., Wildlife Management Institute. p. 78-87.

Evans, R. D. (1982). Opportunities for wildlife management on non-industrial private forest lands. Proc Soc Am For., Washington, DC, p. 207-210.

Fazio, J. R. (1989). "Managing woodlands for wildlife." Practical Forestry 1(2) p. 16-19, 32-33.

Fuller, R. J. a. W. M. S. (1990). Coppiced woodlands: Their management for wildlife. Peterborough, U.K, Nature Conservancy Council. p. 32.

Gray, N. (1986). Woodland management for pheasants & wildlife. North Pomfret, Vermont, David & Charles. p. 176.

Hagar, J. C., W. C. McComb, et al. (1996). "Bird communities in commercially thinned and unthinned Douglas-fir stands of western Oregon." Wildlife Society Bulletin 24(2) p. 352-366.

Abundance and diversity of breeding and winter birds were compared in commercially thinned and unthinned 40- to 55-year-old Douglas fir (Pseudotsuga menziesii) stands in the Oregon Coast Ranges. Abundance of breeding birds was greater in thinned stands. Bird species richness was correlated with habitat patchiness and densities of hardwoods, snags, and conifers. During the breeding season, Hammond's flycatchers (Empidonax hammondii), hairy woodpeckers (Picoides villosus), red-breasted nuthatches (Sitta canadensis), dark-eyed juncos (Junco hyemalis), warbling vireos (Vireo gilvus), and evening grosbeaks (Coccothraustes vespertinus) were more abundant in thinned than unthinned stands. Pacific-slope flycatchers (Empidonax difficilis) were more abundant in unthinned stands. Golden-crowned kinglets (Regulus satrapa), gray jays (Perisoreus canadensis), and black-throated gray warblers (Dendroica nigrescens) were more abundant in unthinned than thinned stands, but these patterns were inconsistent between seasons, regions, or years. Stand-scale habitat features were associated with the abundance of 18 bird species.

Harris, E. and J. Harris (1997). Wildlife conservation in managed woodlands and forests. 2d ed. New York, Wiley, Research Studies Press. p. 342.

Hayes, J. P., S. S. Chan, et al. (1997). "Wildlife response to thinning young forests in the Pacific Northwest." Journal of Forestry 95(8) p. 28-33. Call Number: 634.905 J.

Jackson, J. J. (1990). "Integrating wildlife considerations into forest management". Forestry on a budget. University of Georgia, Cooperative Extension Service. Bulletin no. 1032. p. 47-50.

Kelley, J. W., D. J. Decker, et al. (1983). "State service foresters and private forest land: opportunities for wildlife management USA." Wildlife Society Bulletin 11(2) p. 182-183.

Kirby, K. (1986). "Forest and woodland evaluation". Wildlife conservation evaluation. M. B. Usher. London, Chapman and Hall. p. 201-221.

Latham, D. M., R. S. Oldham, et al. (1996). "Woodland management and the conservation of the great crested newt (Triturus cristatus)." Aspects of applied biology, 0265-1491 44 p. 451-459.

Lorrain-Smith, R. (1991). "The cost of conservation in woodland managed for timber production." Quarterly Journal of Forestry 85(1) p. 43-49.

McCall, I. (1988). The economics of managing farm woodland for game. Farming and forestry: Proceedings of a conference, , 1986., Loughborough University, Forestry Commission (UK). p. 91-94.

McEvoy, T. J. B. S. H. a. S. R. S. (1988). A strategy to improve the adoption of forest management practices, especially for wildlife, on private nonindustrial woodlands. Transactions of the 53rd North American Wildlife and Natural Resources Conference., Louisville, KY, Wildlife Management Institute. p. 62-66.

Miller, B. K. (1992). "Woodland wildlife management". West Lafayette, Ind. Purdue Univ Coop Ext Serv. p. 12.

Morgantini, L. (1996). Commercial thinning and wildlife. Proceedings of a commercial thinning workshop, Whitecourt, Alberta, p. 61-63.

Perkey, A. W. (1989). "Assessing wildlife habitat management objectives on the private non-industrial forest." National Woodlands 12(1) p. 6-7,18. Call Number: SD387.W7 N35.

Roth, R. R., D. A. Gansner, et al. (1983). Wildlife: a prime output of nonindustrial private forestlands in the northeast. Nonindustrial private forests : a review of economic and policy studies : symposium proceedings, Durham, N.C., School of Forestry and Environmental Studies, Duke University. p. 334-337.

Snape, W. J., Ed. (1996). Biodiversity and the Law. Washington, D.C, Island Press. p. 259. Call Number: K3478.B56 1996. On file? Y (one chapter on "Biodiversity and Private Property: conflict or opportunity").

Staffon, R. (1994). Managing your woodlands for wildlife. Woodland Owners and Users Conference, Duluth, MN, Minnesota Dept. of Natural Resources; University of Minnesota Extension Service and Dept. of Forest Resources; Itasca County Extension Service. p. 79-84.

Stewart, W. L. and D. M. Baumgartner (1987). "Pocket gopher control". Pullman, WA. Wash State Univ Coop Ext Serv. p. 11.

Warren, M. S. a. F. R. J. (1990). Woodland rides and glades: Their management for wildlife. Peterborough, U.K., Nature Conservancy Council. p. 31.